



FRIDAY, DECEMBER 7, 1894.

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Contributions.

Danger from Telegraph Poles Near the Track.

New York, New Haven & Hartford Railroad Company,
Superintendent's Office, Providence Division,
BOSTON, MASS., December 3, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I note with pleasure that in your issue of Nov. 16 attention is called (although briefly) to the danger to trains from falling telegraph poles. But for the good judgment exercised by the trainmen of one of our fast freights in abandoning their schedule and "feeling their way" we should have had a disastrous wreck from this cause on the night of Nov. 5. I have long felt that the gigantic poles erected along the tracks of our trunk lines, and daily growing weaker, were a constant menace, to ignore which was to invite disaster. While it may not be practicable, at the present time, to force all poles back, as you suggest, we can and should insist upon rigid inspection and the renewal of any pole showing signs of weakness.

CHAS. A. MCALPINE.

Safe Methods in Block Working.

PORT JERVIS, N. Y., Dec. 1, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The excellent article on "Improvement of Block Working," by Mr. Anthony, in the *Railroad Gazette* of November 23, suggested to me that it may be of interest to some of your readers to know that a fairly good system of controlled manual blocking may be had simply by the use of bell signals in connection with the ordinary outdoor signals.

One important point in block working is to have ensured the prompt placing at danger of the out-door signals behind a train that has passed into a block. If the signals are placed at danger the probabilities are they will not be thrown to safety again until permission has been received from the block station in advance. To attain this point in ordinary manual blocking the following plan is suggested:

As soon as the signalman has placed his signals at danger he should send a bell signal for "My signals have been placed at danger" to the block station in advance. The signal and the time it is received at the advance station should be there registered on the block record, the same as is done with other bell signals.

If this bell signal be not promptly given, the signalman should be asked, by bell, by the signalman at the advance station, "Are your signals at danger?" and an affirmative reply should be obtained. By having his attention thus drawn, the signalman at the rear station, if his signals have not been placed at danger, would undoubtedly see his error and correct it.

In carrying out this plan it should be understood that the signalman at the advance station must not accept a train without having had notice that the signals at the rear station were placed at danger behind the preceding train.

W. L. DERR.

White Lights for Safety Signals.

15 Abercromby Place,
EDINBURGH, Nov 16, 1894.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I notice a letter in your issue of November 2, on "White Lights for Safety Signals," signed "Derrick." If you can, by allowing correspondence on this most important point and by your powerful editorial voice, get the railways in America (now at last so tardily taking up block signalling), to from the first adopt green as the all right signal color for night, and not white, you will not only save them large sums of money, but also probably much life and property.

In Great Britain our signalling arrangements have

always been well up to date except on this one point, but the great danger of a white "all right" signal color has at last been realized, and at great cost the railways are changing their spectacle glasses from red and white to red and green; so that white is now to be considered a danger signal showing that either the arm has fallen down or a spectacle glass is broken. The North British, our largest Scottish railway, is spending £17,000 (or \$85,000) on altering one glass from a white to a green one and, as the N. B. R. is only the fifth largest in Great Britain, you can see how large the sum must be which this alteration is costing in this small country.

But the danger is very great, because the red glass only needs to be blown out, broken by accident or malice, or the mechanism holding up the arm to go wrong, to show the driver a go-ahead light which will send him maybe full tilt into a big smash.

So likewise in Great Britain in the day time a signal arm which is either sticking straight out or hanging right down is a danger signal, and it is only if the arm is hanging at an angle of 45° that the driver is allowed to go on. So that if anything goes wrong between the weight at the bottom of the post and the arm, the arm falls by gravitation into a "danger" position. The beauty of both these regulations is that if they are carried out from the first they cause no extra expense and they make certain that no accident to the signal arm or glasses can deceive the driver into a false idea of safety.

NORMAN D. MACDONALD.

Handling Air-Braked Freight Trains.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Being a practical freight conductor and having had considerable experience with air-brake freight trains, I cannot quite agree with the practice as set forth by W. S. S. in your issue of Oct. 5, nor with Mr. F. M. Nellis in the issue of Oct. 19.

There is no reason why you should not use 40 cars fully equipped with air, except that brakes are never in first-class condition. There are always numerous leaks, and triple valves are out of order so that it is impossible for the average trainman to repair them. I have found, however, that 20 cars fully equipped have been amply sufficient for all practical purposes. A train of 40 "air" cars will give you more trouble in starting the train than if you were only using 20, the air leaking more or less and causing the brakes to stick. And it is hard to obtain the necessary slack to start a train on an ascending grade. I do not consider it safe to use the air on 40 cars on a heavy descending grade. As W. S. S. states, 8 or 10 cars are amply sufficient. If your pump should happen to play out your train would probably get beyond your control before the crew could steady it with the hand brakes. This has happened, to my knowledge, even on passenger trains. If you are following a train closely and your engineer has already made several applications, greatly reducing his pressure, probably the next application he would make would be with such greatly reduced pressure as to not sufficiently check the train to avoid a collision, the crew, of course, not attempting to set the hand brakes.

You cannot make so good a stop with the 40 air cars as you can with 20, even with a "reasonable amount of skill." If you do use 40 cars you have to cut your engine loose from the train and this will cause delay.

It has been my practice in handling partly equipped air-brake trains on a road where knolls and sags are numerous, to do my braking on the cars immediately behind the air-brakes. This avoids the danger of the train's parting. On a heavy descending grade all the braking is done on the rear end of the train. This keeps the train sufficiently stretched to avoid breaking in two and at the same time gives the crew a better control over the movement of the train. If all yards where trains are made up for the road had a system of rigid inspection of the brakes and some means by which they could be tested so that all defects could be detected, there would be less reason why the 40 cars should not be used.

C. M. T.

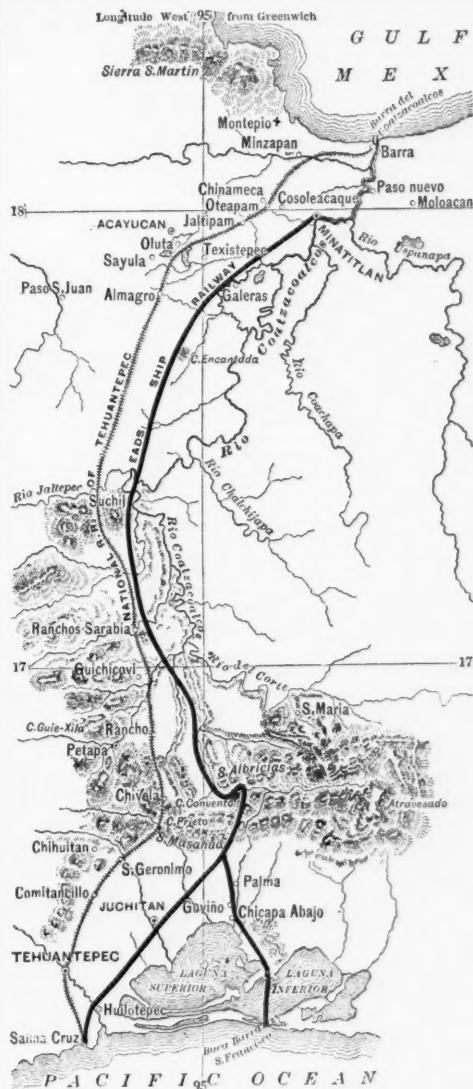
[Some comments on this letter will be found on the editorial pages.—EDITOR RAILROAD GAZETTE.]

The Tehuantepec Railroad and the World's Commerce.

It has long seemed to us that the most natural first step in the demonstration of the proposition that the nations of the earth need a ship canal between the Atlantic and the Pacific would be to build a good railroad with capacious and safe harbors across the Isthmus of Tehuantepec. This would give to trade between the eastern and western coasts of the United States and between Europe and our Pacific Coast, as well as between England and the great Asiatic ports, the advantages of a route shorter than that by the Isthmus of Panama, and a route lying, throughout its whole distance, in a country with a good climate and offering prospects of profitable local business. With this in mind the completion of the National Railroad of Tehuantepec built by the Government of Mexico is a matter of a great deal more interest than the mere length of the railroad would indicate. Therefore, we reprint from the November issue of the *Engineering Magazine* part of an article written by Mr. Elmer L. Corthell, reproducing also a small map showing the "railroad now built" and the "projected" Eads Ship railroad.

The line starts from the Bay of Salina Cruz, in the Gulf

of Tehuantepec, on the Pacific, following the windings of a narrow ravine until it reaches the Zuleta pass, when it descends to Tehuantepec, a city of 15,000 inhabitants. Thence, in very easy lines, it passes across the Pacific plains to the foot of the ascent leading to the Chivela plains on the table lands. Through the Chivela canyon the road is mostly built in solid rock. The lateral canyons, or ravines, are crossed by iron viaducts constructed by the Phoenix Bridge Company, of Philadelphia. At Chivela the elevation is 790 feet above the sea level, but there is a second summit to be overcome in crossing the Sierra de Niza Conejo (crazy rabbit), where the maximum summit is reached, 924 feet above sea level. The maximum grade up to this point and in fact on the entire line is 2 per cent., and the curvature 200 meters (656 feet) radius, although in order to "join the rails" with as little loss of time as possible and with the least money, there are temporary grades of 2 and even 3 per cent., and some few curves of 100 meters (328 feet) radius. The route across the table lands lies through an ordinary rolling country, the maximum grade of the railroad being about 1.8 per cent., and maximum curvature about 600 feet radius. From the Jumuapa River the road passes through a dense forest for many miles to the Atlantic plains. The maximum grade on this slope is about 1.5 per cent. There are five large rivers to be bridged, the largest being the Jaltepec on the Atlantic slope, one of the chief tributaries of the Coatzacoalcas. The only tunnel on the line is about 300 feet in length. The material for the roadbed is generally good. The cross-ties and other timber were obtained from the United States, those for the Atlantic division coming from Pensacola or Mobile, and those for the Pacific slope from the red-wood forests of Oregon, but a large part of the iron work was furnished by Great Britain. The rolling



The Tehuantepec Railroad.

stock is partly American and partly English. Sixty miles from the mouth of the Coatzacoalcas is found suitable limestone rock for harbor works. At Coatzacoalcas there is a well-arranged and suitable terminal station and yard, the building for warehouses and shops being of iron, with corrugated roofs, manufactured in England.

In order to make the railroad valuable as an inter-oceanic route, it will be necessary to improve the two harbors. The terminus on the gulf is at the mouth of the Coatzacoalcas River, which carries to sea for several months of the year a large volume of fresh water. Its water-shed is about 6,500 square miles. The rainfall is quite regular, in its seasons and in its amount, so that it may be depended upon to give a sufficient velocity for excavating and maintaining a deep channel through the bar in the gulf at the mouth of the river. About five miles below Minatitlan, on the opposite side of the river, the largest tributary, the Uspanapa, discharges into the main river. Below the mouth of this tributary at a point in the straight reach of the river, where the width is about 1,000 feet between banks, the average maximum depth on the sections is about 70 feet and the cross-sectional area about 40,000 square feet. The magnitude of this river will be appreciated by a comparison of its area of cross-section with that of the South Pass, Mississippi River, which is 24,000 square feet. It may be said that there is inside of the headlands at the mouth of the river a continuous harbor at least ten miles long. In the area immediately at the mouth, and which will be used for harbor purposes, the 30-foot channel is about 1,000 feet wide and the 40-foot channel 850 feet. The shore on the left bank of the river at the terminal is nearly straight for about a mile. The river enters the gulf between two headlands, one composed of sand dunes and the other of solid land about 60 feet high. The per-

sistent fresh water flow excavates a deep channel through the bar at the mouth of the river.

As to the sea forces available for maintenance, their magnitude and constancy may be appreciated by their action on the outer slope of the bar, preventing its advance, although there is poured into the sea by the river during the rainy season, an immense amount of sedimentary matter. This outer slope, if measured on the line of the proposed channel and between the 18-foot and 44-foot curves, is about 1 in 100, which is a steeper slope than that of any of the other large rivers along the coast of the Gulf of Mexico, except that of the South Pass of the Mississippi as it existed before the jetties were built. These conditions are very favorable for economical construction and maintenance, since the combined action of the river and the sea, one behind and the other in front eroding the bar, greatly reduces the length of the works and the contents of the prism to be excavated by the currents. The plans proposed contemplate parallel jetties extending 4,500 feet from the shore to about 24 feet depth in the gulf; the distance between the jetties to be 800 feet. The material in the permanent structure will be entirely of rock. As this harbor is to be used for a great interoceanic traffic, where the largest class of vessels will enter, a channel less in depth than that at New York or New Orleans should not be considered.

As to the maintenance of these works it is believed that jetties, constructed on the plans adopted—based upon an examination made by the writer of the jetties at the mouth of the Maes, in Holland, where there is at times a much more severe exposure to waves than at any point on the Gulf of Mexico—will be able to withstand the waves from the northers, which blow with great force across the gulf from the Texas Coast and are quite persistent during the winter. As the question of the existence of wind or littoral currents for maintenance of the channel and the erosion of the outer slope of the bar is such an important one, it should be stated that there is a pronounced and constant sea current, with a velocity of from one to three miles per hour, entering the Gulf of Mexico between the Peninsula of Yucatan and the Island of Cuba; this current hugs the shore line all the way along the concave shore of the mainland, past the mouth of the Coatzacoalcas River, Vera Cruz and Tampico.

An observation of the existing physical conditions justifies the belief that there will be a recession rather than an advance of the bar at Coatzacoalcas. There is now upon this bar about 14½ feet of water, and the depth is well maintained and has little variation. From surveys made by Captain Shufeldt, U. S. N. (1871), by the writer (1881), and by Mr. Ripley (1892), there is shown to have been no advance of this bar into the sea for twenty-one years past. The sea and river forces have been in equilibrium, and the bar has decreased in width about 400 feet. Inside of the harbor it is intended to build a wharf of creosoted timber and piles or of steel, 2,000 feet long, parallel to the shore. The slope of the bank into deep water is so steep that this wharf need not be more than 100 feet wide from the shore line into deep water. It is intended to equip this wharf with the necessary tracks, warehouses, and a complete hydraulic plant for handling freight quickly and economically from the ship to the cars and vice versa.

On the Pacific the harbor works will consist mainly of a breakwater of broken stone coped with concrete blocks. The slope of the shore under water is quite steep and deep water is therefore near at hand. . . . There is a constant surf upon the beach of sufficient magnitude to swamp any small boat except during the prevalence of one of the strong northers of winter, when but little surf exists. It will be necessary, therefore, to form a protected and quiet harbor. All freight must now be put ashore by small lighters, resulting in delay and in expense which is often as great as the entire freight-rate of sailing vessels between San Francisco and Liverpool around Cape Horn. To hope that vessels would lie at a pier in such a sea would be idle, and the expectation that any ordinary pier would stand such wave exposure would meet with early disappointment in the loss of the pier, even should the waves permit its construction.

It is estimated that the jetties and auxiliary works at Coatzacoalcas Harbor will cost about \$2,250,000, and the proposed terminal wharf and its equipment \$360,000, the Salina Cruz breakwater \$2,700,000, and the terminal piers and dredging \$385,000, making a total for the harbors and terminals of \$5,695,000 (gold). The contract for railroad work terminated in September. What it will cost to make the necessary betterments for interoceanic business in the way of reducing grades, improving curves, widening cuts, proper ballasting, equipment, and other expenses, it is difficult to estimate. Probably \$2,000,000 would be sufficient to begin a good interoceanic traffic, so that the total estimated cost after September for the harbors and railroad, exclusive of interest during construction, would be about \$8,000,000 in round numbers.

The commercial features give rise to questions that are of great moment and far-reaching. Commercial movements are in such delicate equilibrium that a disturbance of any kind, an improvement of a route or the opening of a new one, may effect the entire commerce and with it the industries of the world. Take the tea trade for which the Suez Canal and the transcontinental lines of the United States are contending. In 1884, 49,964,482 lbs. of tea reached the Atlantic Coast of the United States from China via the Indian Ocean, the Suez Canal, the Mediterranean and the Atlantic, while 18,256,764 lbs. came across the Pacific via the transcontinental lines to the country east of the Missouri River. But the San Francisco route is gaining. In 1890 the amount of tea received via Suez had decreased to 43,000,000 lbs., although the total amount handled had increased enormously. At the same time the amount handled by rail had increased to 39,000,000 lbs. It is necessary, therefore, to study the increase, as well as the general movements on the various routes of the entire traffic of the world.

The aggregate commerce of the five principal maritime nations—the United States, Great Britain, Germany, France and Spain—increased 20 per cent. in the last decade, the annual increase averaging 2 per cent. Probably this rate would be diminished by including the returns from all other nations. It is safe to estimate the annual increase of the commerce of the whole world during the present decade at 1.10 per cent. at least, and this figure is used in the estimates which follow. From the sources mentioned tables have been compiled showing the number and registered tonnage of vessels engaged in trade between the ports of twelve countries and the ports of twenty distinct countries on the Pacific and Indian Oceans in 1890. Other tables show the commerce on still other routes. Analyses have been made of the amount of freight constituting the transcontinental traffic between the Pacific and points east of the Missouri River, with details of the freight carried from seaboard to seaboard; even the passenger traffic has been carefully investigated, that transported on certain routes in 1891 being compared with estimates of the percentage and number that would travel in 1896 via the Tehuantepec route, be-

tween Australia, Honolulu, China and Japan to Europe, Pacific, Mexican and Central American ports to Europe. San Francisco to New York via Panama and vice versa, the westward movements, and other, though perhaps less important, travel between Cuba and China via New Orleans; passengers via the Suez Canal and local passengers from all points on the western coast of Central and South America to points east of the Isthmus on the Gulf and Atlantic. The time required for freight by various routes and the estimated time via Tehuantepec has been carefully investigated.

As an illustration of the importance of this examination, take the following summary as between the representative termini of New York and San Francisco, in which is given the actual time consumed in days and the distance in statute miles, equating the ocean and rail distance by multiplying the latter by 3; although, if the equation is made on the basis of the real comparative cost, 5 rather than 3 should be used.

Routes.	Number of Days.	Miles.
Around Cape Horn (by sail).....	140	15,420
Via Straits of Magellan (steam).....	60	13,090
Via Transcontinental lines (fast freight).....	25	10,203
Southern Pacific to New Orleans (rail).....		
New Orleans to New York (steamship, fast freight).....	14	9,386
Via Tehuantepec.....	20	4,280

One of the most important reasons for opening the Tehuantepec route will be seen by comparing the time and distance of the all-rail routes with the time and distance of the half rail and half-ocean routes by way of New Orleans. In these simple figures lie the main reasons why the Southern Pacific and Morgan Line route via New Orleans has been able to obtain from 75 to 90 per cent. of our entire transcontinental traffic. Now, if the fact that this route is one-half water has given it such an immense advantage over the all-rail lines, may we not expect that, by carrying this principle further and uniting the two coasts by a practically all-water route on the shortest possible line, we may obtain some of the immense traffic between the Atlantic and Pacific Coasts and interior of the United States? May we not further expect from the new and extraordinary facilities given to this country and particularly to the ports of the Gulf of Mexico we may develop an entirely new coast-wise traffic between the southern and eastern coasts of the United States and Mexico and the Pacific?

Freight rates by all the various routes and of different classes of freight have been studied for the purpose of determining a reasonable charge for transportation via Tehuantepec. The highest and lowest freight rates in 1891 on the eastern and western routes of the world for representative cargoes have been followed in great detail for the purpose of forming a reliable judgment. The varied questions of the present increase of traffic on all the main routes between the various countries and for various products have been investigated, and these results applied to the proposed route of Tehuantepec. The estimate of the commerce that will be handled by the National Railroad of Tehuantepec has been based upon (1) the annual increase of the world's commerce, (2) the traffic of the season of 1890-91, and (3) the time fixed for opening up the route (1896). The traffic figures are based on freight tonnage, the rates being on the basis of the weight of commodities and not the registered tonnage of vessels. Instead of quoting a meridian of longitude as the boundary of the "attractive influence" of the Tehuantepec route, the actual reports of shippers and recognized facts, and the trend of commerce, have been taken to show the extent of this influence. It has been properly considered in the estimate that the saving in distance and time by the Tehuantepec route means that by a shorter route a large number of voyages per annum can be made and consequently greater return to the vessel owners on their investments, and, in addition

The writer contends that the great advantages—geographical, physical, nautical and commercial—of the Tehuantepec route over Cape of Good Hope, Suez Canal, Cape Horn, Straits of Magellan, Panama, Nicaragua and the transcontinental lines, would enable it to divert to itself and create a combined aggregate tonnage of great magnitude, and that this route can successfully compete with any of those above mentioned, including Nicaragua, which is considered (erroneously in the opinion of the writer) to possess great special advantages. But the writer also knows that the Tehuantepec route must, in order to compete successfully, be fully equipped in extensive terminal and wharf facilities and be operated on the lowest possible grades permissible, with the easiest curvature, with a sufficient equipment of rolling stock and in close connection with its own steamship line on the Pacific and the Atlantic, with harbors on both sides accessible to the largest ocean vessels under all conditions of weather.

On the above basis a summary of the detailed estimate shows that there may be reasonably expected in 1896, a total through traffic of 5,288,037 tons, and that the gross receipts, with the addition of the passenger business and the local traffic on the isthmus from the adjacent and already rapidly-developing country, would amount to over \$10,000,000 (gold).

The importance to the United States and to all other maritime nations to provide an interoceanic route, the approaches to which are favorable for sailing vessels, cannot be over-estimated. Mr. Romero has given a brief comparison of nautical conditions at various points on the American Isthmus, which shows the impracticability of sailing vessels using the more southern routes on account of persistent calms and unfavorable winds in both oceans, and the entire practicability at Tehuantepec, on account of favorable winds. The world's tonnage that will be affected by an interoceanic route is larger in sail than in steam. In the fiscal year 1892-93, the fleet employed in trade between European and United States Atlantic ports and between Australasia and the Pacific Coast was made up as follows:

	Steam.	Sail.
Register tonnage.....	2,535,202	3,958,891
Equal to cargo tonnage.....	3,250,000	6,400,000

In conclusion it should be stated that, by the wisdom and far-seeing policy and the persistent efforts of the President of the Mexican Republic, not only the railroad, but the harbors, terminal facilities, and sufficient equipment, and all that is above outlined, will be provided within the next three years. The opening of this interoceanic route for the benefit not only of Mexico but of the world, is one of President Diaz's cherished objects. The question now is into whose hands will this important route fall for operation and control. Shall it pass to Europeans or to citizens of the United States? The country the citizens of which shall operate it will have for the next century a commercial advantage that cannot be over-estimated. By whomsoever operated, this route is certain to effect a revolution more far-reaching and more important to the commerce and industry of the world than that which followed the construction of the Suez Canal.

Sundry Engineering Matters Considered in the Construction and Operation of the New York and Brooklyn Bridge.*

(Concluded from page 819.)

The Drum Gears.—The drum driving gear is briefly described as follows: Surrounding, but not in contact with the main shaft, and midway between the pair of winding drums, is a long sleeve or hollow shaft. Each shaft runs in its own pillow locks, and the two are connected by a pair of friction clutches, one at each end of the hollow shaft, and each closing toward the other. Centrally around the hollow

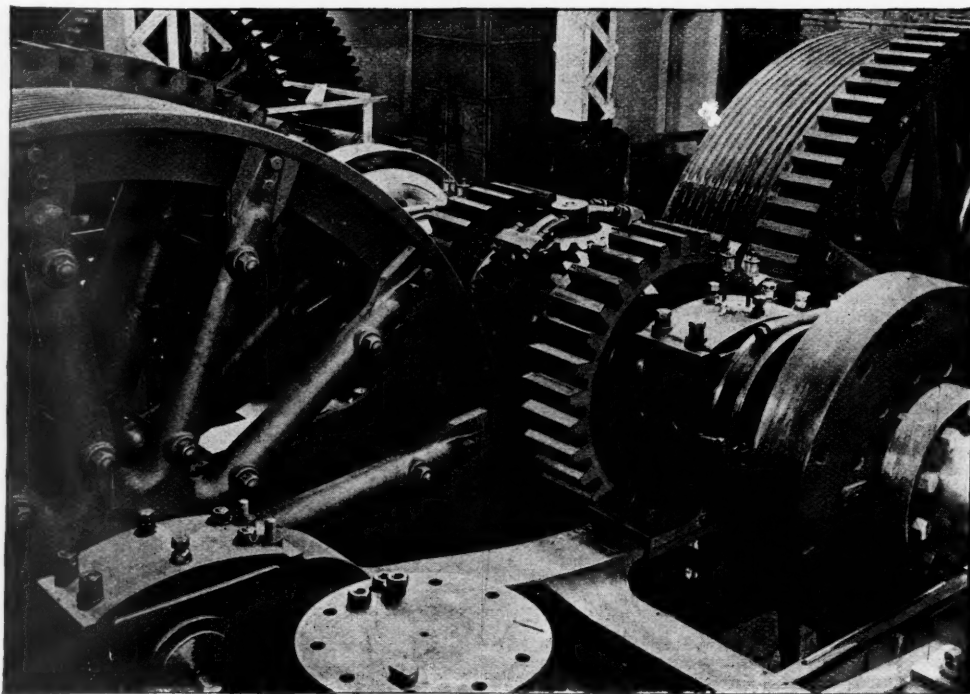


Fig. 7.—Drum Driving Gear.

to this saving, an increase of annual earning capacity of vessels. By the use of the shorter route there would be the saving in the wear and tear of craft by avoiding the stormy routes by Cape of Good Hope and Cape Horn, also smaller cost of insurance and a general diminution of running expenses. It has also been taken into consideration that sailing vessels could use this route, while it is impracticable for them to use the Suez Canal on account of the impossibility of navigating the Red Sea, or to use the Panama route on account of unfavorable nautical conditions in both oceans.

shaft and rigidly attached to it, is a strong cast iron frame, which carries three small bevel pinions, each on a radial shaft, the three shafts being 120 degrees apart. Running loose on the hollow shaft, on each side of these pinions and engaging with them, is a beveled gear, which is bolted fast to a spur pinion similarly placed that takes into

*A lecture delivered October 23, 1894, before the Engineering Section of the Brooklyn Institute of Arts and Sciences, by G. Leverich.

a large spur gear attached to one of the two drums. In operation, the arrangement acts thus: The main and hollow shafts being clutched together and driven; with these shafts, the bevel pinions and wheels and the spur pinions will be carried around without revolving on their bearings, so long as the resistances of rotation of the two drums are equal, and the latter will revolve alike and with the driving shafts. When, however, from the extension or retraction of the several lines of cable around the drums, these resistances tend to become unequal, the pinions and wheels will revolve slightly on their bearings, and the drums will revolve unlike sufficiently to compensate for the mean differences of expansion and contraction of their lines of cable, that drum which otherwise would be most laden rotating as much slower as the other does faster than the driving shafts. In either case, however, equal power will be transmitted to the two drums. In service, though the two drums rotate one sometimes slower and then somewhat faster than the other, the aggregate numbers of revolutions, day by day, are about equal.

These gears for the two pairs of winding drums, were in service constantly, the one and then the other in succession, 20 hours each day for about five and one-half years; then, in consequence of changes being made to provide for an increase in capacity of the railroad, requiring additional motive power, when it was possible to thoroughly examine the several parts, it was found that the wearing surfaces of the gear teeth, still showed the tool marks, and that none of these parts, under the severe and continued service to which they had been subjected, exhibited any considerable wear. This was interesting, since perhaps no cable winding plant moves greater loads than this; some other plants which have failed, were driven by gears of twice and even thrice the width of face of those here in use.

to transmit the power imposed upon each. In their design, these conditions were observed: The driving and driven parts are independent, each rotating on separate bearings, and neither loosely upon the shaft; slight differences in alignment or eccentricities in rotation, do not interfere with ready engagement or disengagement, and this is effected surely, easily, promptly and without shock; also they are self-contained and in their operation, impose no side thrust on their bearings, or on the shafts connected.

The clutch consists of a number of thin, annular wrought-iron plates, placed concentric and close together around the shaft axis, and in an enclosing cylindrical frame or box. These plates are of two different diameters, and interlaid in position, so that by means of keys, upon which they severally slide, the large plates rotate with the driving, and the smaller rotate or stand idle with the driven shaft. When the clutch is to be engaged, a set of short toggles is extended by suitable mechanism, whereby the plates are forced into contact on these adjoining surfaces, and sufficient friction induced to effectually lock them together; these surfaces meanwhile being bathed with oil.

A considerable number of these clutches, members of the cable driving plant, have been in operation over six years; so far, not one has failed to perform as intended and the resulting wear is very small. The larger one, capable at 70 revolutions per minute, of transmitting more than 1,500 horse-power, is made up of 27 plates $\frac{3}{8}$ in. thick; the diameters of bearing surfaces are $63\frac{1}{2}$ in. and $47\frac{1}{2}$ in., and this power is developed by a pressure producing about 13 lbs friction per square inch on the total area of the several bearing surfaces. Besides serving so well to transmit power, at times, when to prevent accident it was necessary to quickly stop the driving plant, a larger clutch standing idle and connected with an

quence, the last cars purchased weigh nineteen tons each. They keep their form and lines under the heavy service rendered, and pass through such collisions as have so far occurred since their delivery with little or no injury. The car body which, with one truck, recently dropped several feet from the track to the platform beneath, would have remained intact, had it not fallen on a pile of planks, which broke into the side about the central door.

Decision Against Brotherhood Employees on the Reading.

Judge Dallas, in the United States Circuit Court at Philadelphia, has denied the petition of Brotherhood brakemen for an order compelling the Receivers of the Philadelphia & Reading to refrain from discharging them under the long-standing rule of the road that no Brotherhood man would be employed. The particulars of this case were set forth in the *Railroad Gazette* of Nov. 16, pages 783 and 790. The petitions are all dismissed.

The first petition, filed Oct. 8, was made by S. E. Wilkinson, Thomas McDermott and George H. Ruppel, acting for themselves and for all members of the Brotherhood of Railway Trainmen, an unincorporated voluntary association. The Receivers showed that Ruppel had been employed only about one week before the petition was filed and therefore had no right to claim that the company issued any notice to him on Aug. 15; and that in applying for work he declared in writing that he was not a member of any labor organization. McDermott made a similar statement, but the paper could not be found and the Receivers agreed not to discharge him. Judge Dallas says that Wilkinson (Chief of the Brotherhood) has no standing in court. Neither the road nor the Receivers ever made any contract with his Brotherhood and his inclusion as a party to the petition was without color of right.

"As to the remaining petitions, the case, in view of the matters set up by the answer, was not pressed, and it is clear that it could not as to either of them have been persisted in with success. It could not have been reasonably insisted that the Receivers should be com-

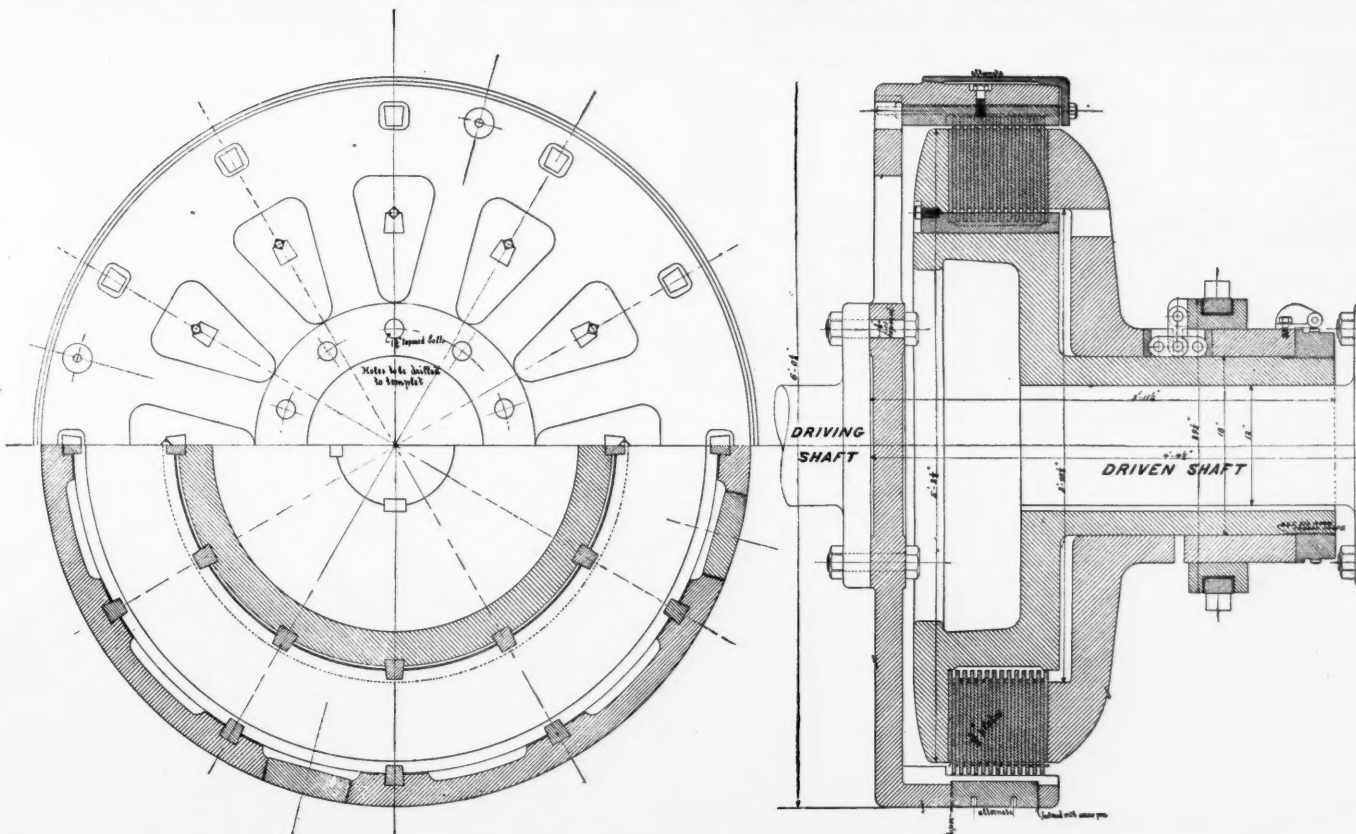


Fig. 8.—Friction Clutch—transmitting 1,500 HP.

Special care was taken in the design of the new driving plant, to arrange for thorough lubrication of the journals, adjustment of parts subject to wear, and the renewal of those which may fail. With but little exception, all journals run in hard brass bearings, capable of adjustment in either direction; the bed plates of the plant are on solid masonry piers, carried down to the basement, so that the foundation bolts, as well as the steam and exhaust pipes and their several fittings, are readily accessible. For lubrication, varied means are employed. The journals of the direction sheaves are supplied with a prepared grease, about the consistency of lard, from a reservoir conveniently placed and connected with the pillow blocks by small pipes. This reservoir being fitted with a piston and screw, the attending workman, once or twice each day, by the movement of a lever, forces the lubricant in ample quantity upon the journals. The small bevel pinions in the drum driving gears had special treatment. During the twenty hours they are continuously worked each day, examination and lubrication are impracticable; hence the shaft of each pinion was bored out quite large and capped, thus forming a pocket for storing a supply of oil for the two journals. It is fed therefrom by a suitable device through small oil holes at each bearing. This arrangement, so far, has fully accomplished the purpose intended.

The Friction Clutches.—The friction clutches, whereby the driving engines and the winding drums, at the will of the operator, are attached or detached from the main shaft, are all of one style, differing only in their capacity

engine at rest, has been thrown in and acted effectually as a brake.

The Grip.—On a cable railroad, the apparatus by which the cars are attached to the moving cable, commonly called "the grip," is the most important, as well as oftentimes the most troublesome, of all the operating mechanism. This apparatus on the Bridge Railroad is too well known by engineers to be here described. As constructed and used for some years past, though its general and distinguishing features are substantially as when first designed by Colonel Paine, in minor and essential details it has been changed and improved, subject to the experience acquired during its long service; so that it is now a machine, certain and economical in action, and as reliable under stress and wear as other and ordinary parts of a working railroad. Proportioned to haul a single car, it frequently hauls two and sometimes three cars; and under occasional and extraordinary test, has shown it possessed still greater hauling capacity.

The Cars.—At first, the railroad was equipped with cars, one-half in number of small size, weighing eight tons each, and one-half of larger size, weighing ten tons each; neither had central side doors. Soon the convenience of the latter was recognized, and they were inserted in the cars on hand, as well as in others subsequently ordered. To restore stiffness to the side framing, impaired by the openings made, and to otherwise strengthen the bodies, so that in slight collisions, sometimes happening at the stations or on the sidings, the weak places were made stronger by additional timbers and plates, and in conse-

quently to continue Mr. Ruppel in their employment, notwithstanding the fact that he had obtained admission to it by making a declaration which was either not true when made or was immediately afterwards falsified, and the disclaimer of intention to discharge Thomas McDermott of course ended the matter as to him."

This ended the original case and new parties or new statements of facts had no right to recognition; but the judge waives this point and discusses the petitions of Hicks and Riley, which were filed on Oct. 8 and amended Oct. 27 and Nov. 13. The final arguments were on the original petition as amended by these last complaints.

The decision then recites the main facts. The rule of the railroad against the employment of Brotherhood men was made in 1887. The Receivers continued it. Hicks was employed as brakeman Oct. 20, 1893. The rule against brotherhoods was presented to him, but a subordinate officer, without the knowledge of the Receivers or of the General Superintendent, engaged him without exacting assent to the rule. On Aug. 15, 1894, he was notified that unless he would give up his membership he would be discharged, but he retained both his membership and his employment. As to Riley, his proposed discharge was due solely to unsatisfactory service. As to Hicks, the decision goes on to say:

"The circumstances disclosed in the case do not entitle him to the interposition of a Court of Equity on his behalf. Without animadverting upon his participation in the equivocal and exceptional means by which he secured his present employment, it may at least be said that his assumption that the fact that he so secured employment imposes upon the Receivers an obligation to retain him in it, ought not to be sustained. Even if they should not be permitted to dismiss an employee because of a fact known to them when they employed him, still they should not be compelled to keep in their service one who, without their knowledge, entered it in conscious violation of a long-established regulation, though with the connivance or negligent assent of some minor official.

The notice of Aug. 15, 1894, was, therefore, rightfully given and should have been regarded. The Receivers had done nothing which, upon any reasonable ground, could be set up to deprive them of that freedom of action which, in such matters, employers and employed are alike, and always, at liberty to exercise. When unaffected by contractual obligation, the right to determine their personal relations pertains to all men, is no less inviolable than is their right to form them according to their own will and pleasure. Mr. Hicks might certainly leave the service of his employers for any cause, or without cause, and I know of no principle upon which the like privilege could be denied to them. As was said by Mr. Justice Harlan, in *Arthur vs. Oakes*, 63 Fed., 317: "It would be an invasion of one's natural liberty to compel him to work for or to remain in the personal service of another." The rule, we think, is, without exception, that equity will not compel the actual, affirmative performance by an employee of merely personal services, any more than it will compel an employer to retain in his personal service one who, no matter for what cause, is not acceptable to him for service of that character. The right of an employee engaged to perform personal service to quit that service rests upon the same basis as the right of his employer to discharge him from further personal service. If the quitting in the one case, or the discharging in the other, is in violation of the contract between the parties, the one injured by the breach has his action for damages, and a court of equity will not indirectly or negatively, by means of an injunction restraining the violation of the contract, compel the affirmative performance from day to day or the affirmative acceptance of merely personal services. The promise made by Mr. Hicks, after his petition had been filed, may have been, and probably was, influenced by a desire to assure his retention of his place notwithstanding his failure to respect the notice of Aug. 15; but it was not induced by any threat then made, nor does it appear that his participation in this proceeding was objected against him. If it had been, I would not have hesitated, upon attention being called to it, to make it quite plain that no man can be prejudiced by applying to the Court for relief to which he thinks he is entitled. But there is nothing of the kind in this case. The purpose to discharge Mr. Hicks, unless he would resign from the association, was communicated to him about two months prior to Oct. 8, and his promise of that day was given simply in the exercise of his right of election between the alternatives which had been previously presented to his choice. The fact is that he did agree to sever his connection with the Brotherhood, and though in making his selection he was doubtless confronted by a dilemma, it is obvious that he was not in any legal sense subjected to compulsion. But it is not necessary that I should, and I do not, rest my judgment upon this tardy agreement. It is at least certain by making it Mr. Hicks acquired no better position than he occupied before, and without it I am of opinion that the Receivers would have been justified in dismissing him upon grounds peculiar to him, and wholly irrespective of the broad question which he has attempted to obtrude into his case.

"It results that the petitioner Hicks has not made out a case entitling him to the relief which he seeks, and it is even more manifest that the case of George S. Riley is utterly devoid of equity.

"Here discussion might well end and both petitions be dismissed. This matter has been pending since the 8th day of October, but no person other than those who have been mentioned has asked to intervene. These petitioners assert that they represent other unnamed employees of the Receivers, but it has not been shown that they do, and if it had been it would not be assumed that such others are better situated than the petitioners themselves. But even if they were to be regarded as class bills, these petitions could inure to the benefit of persons only whose claim to relief is the same as that of the specified complainants, and whose equal title is founded upon the same alleged equity. The case of the actual plaintiffs cannot be strengthened by an averment that the case of some other person or persons, if presented, would be stronger; but it is contended that the general proposition which has been discussed at bar should be abstractly considered and without regard to the merits of the particular cases in which it has been propounded; that the Court, being informed that Receivers of its appointment are alleged to be pursuing a wrongful course, should investigate their conduct at the instance of any informer—though himself without standing to complain of it—and if it should find that wrong has been done or is purposed, should hinder its continuance or commission. I cannot assent to this. It is hardly necessary to say that, in an ordinary case, an injunction will not be awarded except at the suit of a party threatened with injury, and I am unable to perceive why, in the case of a receivership, a court of equity should be moved to restrain its receivers, or to admonish them as to their duty, at the instance of an accuser who is not interested either in the cause or the particular subject to which his accusation relates. Any such practice would be anomalous. It would not be supported by either reason or authority. Its effect would be mischievous. If receivers were required to answer with respect to their official acts at the suit of a mere meddler, the administration of their trust might be impeded by the constant and repeated intrusion of causeless objections; and if the courts were to give attention to every criticism which might be volunteered for their attention they would simply invite any litigious busybody to add his chimeras to the burthen which cases of this kind legitimately impose upon the judges. Yet, as the counsel of the petitioners have earnestly urged me to inquire, as of my own notion and independently of suggestion, whether these Receivers should not be directed to abandon the position with respect to labor organizations in which a rule of the railroad company has placed them, I have carefully and fully considered the matter, and, waiving the irregularity in this case, I will, so far as I deem it to be proper that I should do so, briefly indicate my views upon the question thus pressed for solution.

"The rule which is attacked was established, not by the Receivers, but by the railroad company itself, and several years before these Receivers or their predecessors in office were appointed. Therefore, the question is not whether a policy originated by the Receivers should be sanctioned, but whether they should be forbidden to continue in force a regulation which they found in operation when they assumed control of the business. It is to be observed, too, that it is not essential to the proper determination of this question that the character or objects of the association called the Brotherhood of Railway Trainmen should be either approved or condemned. In the argument submitted for the petitioners much has been said in commendation of it and in support of the claim that it is not only a lawful body, created for beneficent purposes, but is one of a class which public policy encourages and upholds.

"I think, however, that the Court should not needlessly enter upon the investigation of this claim. The Brotherhood of Trainmen is not a party to this proceeding, and therefore its constitution, conduct and motives should not

be unnecessarily scrutinized. If I entertained an unfavorable opinion of it, it would be manifestly improper for me to seek occasion to express that opinion; and it would, I think, be scarcely less objectionable for me to obtrude any declaration in its favor. The ground upon which it is supposed that the Courts should avail themselves of every pretext to discuss and rule upon the good or evil influences and tendencies of such associations is, in my judgment, the very ground upon which they should endeavor to firmly maintain a judicious reserve with respect to them. If, indeed, an inquiry as to their status and aims would involve the consideration of 'vexed and new questions,' of 'the greatest social problem of the day,' and of 'the burning question of modern times,' then surely the announcement of a 'policy of Courts' concerning them should not be attempted, but avoided. The solution of social problems and of vexed new and burning questions has not been confided to the Judiciary. Courts are established to administer the will of the Legislature as embodied in law, and not the personal—it may be discordant—views of the Judges themselves on matters of public concern. Evils resulting from the inconsiderate conduct of either employers or the employed 'are to be met and remedied by legislation'; and 'in the absence of legislation to the contrary, the right of one in the service of a quasi public corporation to withdraw therefrom at such time as he sees fit and the right of the managers of such a corporation to discharge an employee from services whenever they see fit, must be deemed so far absolute that no court of equity will compel him against his will to remain in such service or actually to perform the personal acts required in such employment, or compel such managers, against their will, to keep a particular employé in their service.' (*Arthur vs. Oakes*, 63, Feb., 31).

"The real question, however, is not whether the Brotherhood of Railway Trainmen is or is not inimical to the general welfare, but whether these Receivers should be ordered to retain its members in their service despite the company's pre-existing rule to the contrary and against their own unanimous judgment. If such an order ought to be made, it must be because the action to be restrained would injuriously affect the interests the Receivers have in charge, or would be contrary to law or unjust to those immediately concerned. If there is any other consideration upon which the direction asked for could be based counsel have not suggested it, nor do I perceive it.

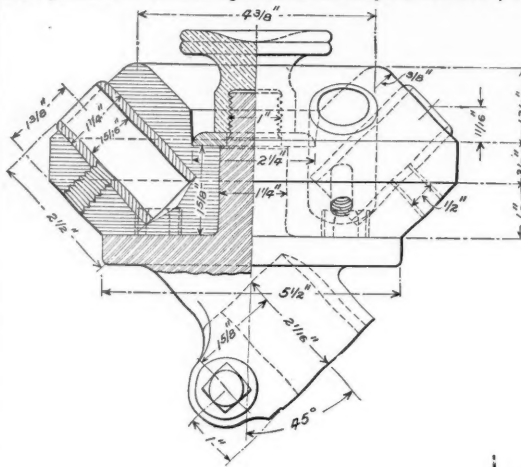
"There is absolutely nothing before the Court which would warrant it in holding that the trust property is likely to be injuriously affected by the Receivers' enforcement of the company's rule. No one interested in that property has said so, and the Receivers, who, presumably, are best qualified to form an opinion on the subject, and who

enough to say that they are not to be found upon the statute book of the State of Pennsylvania or of the United States, and, therefore, they are neither applicable to this case nor mandatory upon this Court; and if any inference as to the 'policy' either of the Federal Government or of Pennsylvania can be rationally deduced from the existence of such laws in certain of the States it would seem to be that by abstaining from similar legislation Congress and the General Assembly of Pennsylvania have indicated their dissent from its principle. At all events public policy cannot, in the absence of law, be enforced by courts of justice. Policy may direct the Legislature in commanding what is right and prohibiting what is wrong, but the law alone determines for the Court the rightful or wrongful nature of any conduct which is submitted to judicial investigation.

"I do not doubt the authority of a court of equity to restrain its Receivers from treating those whom they employ unjustly or oppressively, and when its power in that behalf is properly invoked and the allegation of injustice or oppression is sustained, the protection which such a court may afford should be promptly and efficiently accorded. This, in my opinion, is and should be the law; but has a case of injustice or oppression been made out in the present instance?

"The rule complained of was promulgated as long ago as the year 1887, and the Receivers emphatically assert their belief, which is not controverted, that no employee has since entered the service in ignorance of its existence, or joined the Brotherhood of Railway Trainmen without being aware that by so doing he violated it. There is some uncertainty as to the number of the Receivers' employees who have become members of the Brotherhood, but it is certain that they constituted a very small proportion of the whole force. To release these particular men from the operation of a rule which was known to them when they took employment, and which, except possibly in a few instances, occurring through the oversight or neglect of some subordinate agent, they expressly accepted, would be unfair to the others; and to wholly abrogate the rule, or to suspend its operation generally, would open the door to a complete reversal of a policy which was deliberately established by the company several years ago, and which has since been pursued.

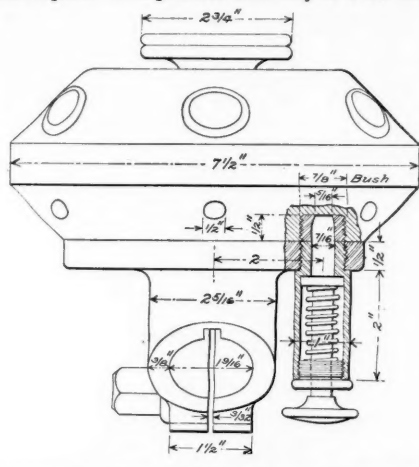
"In short, the Court is asked, in a proceeding ostensibly instituted to obtain an order for the guidance of the Receivers during the brief period of their control, to enter a decree, the practical effect of which would be to permanently annul a regulation adopted by the owners of the property, and this without the consent of those most interested in it. I have not been convinced that there is anything in this case which would justify compliance with this request. It is possible there may be a few men



Turret Head for Lathe, C. & N. W. Ry.

cannot be assumed to be untruthful, have united in the statement that they believe it to be to the interest of their trust that the rule referred to should be enforced. I accept this, the only evidence on the subject, as conclusive. I am not competent to form an independent judgment upon it, and in this district the practice of the Court has always been to rely largely upon the discretion of its Receivers with respect to the policy and details of their management, especially where, as in the present instance, it is not challenged by any person who is entitled to question it.

"That the contemplated action is not unlawful is too plain for argument. That it contravenes public policy is asserted; but how can this be established? I know of no means of ascertaining the policy of the public in relation to personal rights but by consulting the public laws. This particular association is not a corporation, but if it were it would not follow, as seems to be supposed, that it could rightfully insist upon the retention of its members in the service of another corporation against its will. Neither is the argument advanced by showing that in some States it has been declared by statute to be a penal offence for any employer of labor to coerce or compel any person to enter into an agreement not to join any labor organization as a condition of such person's continuance in such employer's service. I need not consider the effect of these enactments within the territorial limits of the sovereignties by which they have been enacted. It is



A Turret Head for Engine Lathes.

The advantages of the turret lathe and the facility with which certain classes of work can be accomplished by its use are matters with which men of a mechanical turn of mind are pretty generally acquainted. It often happens, however, in machine shops, that the amount of work for which the turret lathe is especially adapted, is not great enough to warrant the purchase and installation of one of these machines, or it may at times be greater than the capacity of the machines already installed.

The Chicago & Northwestern Railway Company has in use a simple attachment, the construction of which is shown in the accompanying illustrations, by means of which a lathe of the ordinary type can quickly be made to serve as a turret lathe if required. The attachment is clamped and keyed on the tail spindle of the lathe and carries an arbor the axis of which intersects the line of centers of the lathe at an angle of 45 degrees. Upon the arbor is mounted a cast iron head provided with six tool sockets, so placed that their axes coincide successively with the line of centers of the lathe as the head is revolved about the arbor. A small plunge bolt, actuated by a spring, and shown in section, serves to lock the head at the proper point, after which it is clamped tightly by means of the hand nut on the arbor. The device is very carefully and accurately made and is often found very useful. The tool sockets are bushed with steel as shown by the sectional view.

The Marsh Steam Pump.

The accompanying illustrations show a few of the more important features of a type of steam pump made by the Battle Creek Machinery Co., of Battle Creek, Mich., and adapted to a variety of uses.

There are in this pump, excepting for the water valves, but two moving parts, the steam and water pistons and the steam valve, and these are not in any way connected, as in most pumps. The motion of the steam valve is controlled entirely by steam pressure in a manner that can best be explained by reference to the sectional view. A small port, shown in dotted lines, allows steam to pass from the steam chest around to the small cap on the center of the cylinder head. From this center there projects inwardly a small tube, which extends nearly to the opposite end of the cylinder, the piston rod being bored to receive it. This tube is smaller than the bore of the piston rod and fits loosely in the rod and conducts live steam from the cap on the head of the steam cylinder to the inside of the piston rod, from which it flows out through small ports into the space between the double piston, which has two packing rings and has a small annular opening between them, as shown by the illustration.

A small auxiliary steam port reaches from each end of the steam cylinder to the corresponding end of the steam chest, as shown by dotted lines, and the openings into the cylinder of these two ports are so located that, as the steam piston nears the end of its stroke, live steam from the center of the piston will flow into the end of the steam chest, and its pressure, acting on the outside of the valve piston, will reverse the valve to the opposite end of its stroke. This admits steam to the cylinder, cushioning the end of the stroke and reversing the motion of the piston and also establishes live steam pressure on the inner area of the valve head. This area, reduced by an amount equal to the cross sectional area of the valve body is acted upon by live steam pressure, which varies with the annular opening of the valve due to linear movement. The outer area of the valve head is larger and is acted upon by the pressure that moves the main piston. The working pressure in the main cylinder, acting

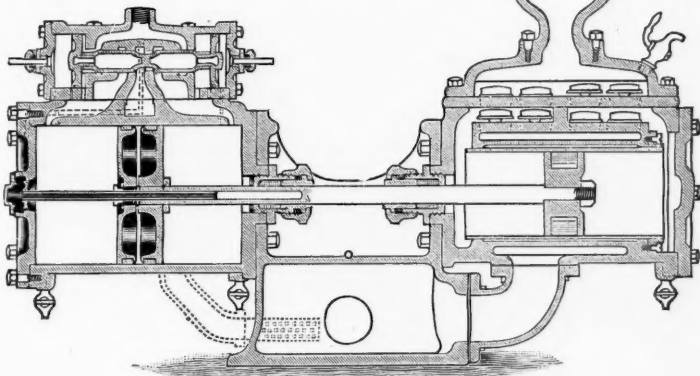


Fig. 1.—The Marsh Pump.

upon the larger area of the valve, tends to increase the annular opening of the valve, while the incoming steam, acting upon the smaller area of the valve head, tends to reduce the area of the annular opening, which movement finds its limit in the preponderance of the opposing force. If the piston moves easily, much pressure cannot exist in the steam cylinder, as the piston would readily fly away and as steam pressure in steam cylinder and outer end of valve chamber is always the same, the larger area of valve head would have slight force to enlarge when the piston moves easily. On the other hand if the piston moved hard or against much resistance, the pressure in the cylinder would readily augment and the larger area of valve head would overcome the resistance of the inner area and increase the portage of the valve. This is an important feature, as the pump is automatically regulated and cannot run too fast to take suction nor can any injury occur to the governing parts in case suction is broken or throttle valve is wide open. This governing element makes it impossible for the pump to pound or run away. Fig. No. 2 shows more clearly the details of the steam valve.

The water valve is shown in Fig. No. 3. It consists of a cup-shaped valve, a central guiding pin and a valve seat and disc, as shown. This disc is slightly larger than the opening beneath it and causes the water to be deflected to the side. The valve can be raised by the water only so high as the lower edge of the disc, and a stop to limit the lift of the valve is therefore unnecessary. With this valve the spring commonly used is also unnecessary. The valve seats softly on account of the water beneath the top of the disc and the valve.

The base of the pump is cast hollow and forms a chamber to which the suction may be connected on either side, and conducted from thence to the water cylinder through the elbow on the under side of the water cylinder. Another important feature of this pump is the exhaust deflecting valve placed at the side of the steam cylinder by means of which the exhaust steam may be turned to a passage leading up through a check valve and thence into the water chamber, which forms the base of the pump, thus condensing the exhaust steam, reducing back pressure and returning the heat of the steam to the feed water.

These pumps are quite extensively used, not only for boiler feeding but also for returning directly to the boiler the condensation in steam-heating systems, clarifiers, dry kiln coils, steam jacket kettles, and steam mains; also for supplying tanks, factories, etc. It is claimed by the makers, not only that the friction in these pumps is less than in all

slide valve pumps of equal capacity, but that they use the steam more economically; also, that the area of the water valve is about three times as great as in any other pump, it being unnecessary in this pump to restrict the area of the valves in order to govern the pump.

Some Lessons of the Scrap Pile.

A paper entitled "The Scrap Pile" was presented by Mr. J. N. Barr at the November meeting of the Western Railway Club; a synopsis follows:

The scrap pile contains articles similar to those found in the store-house, but the articles in the scrap pile are not so nicely assorted and arranged. The articles in the store-house tell only what they can be used for; those in the scrap pile tell whether each article has been used in its proper place and received proper treatment. There are bolts, wheels, brass and other parts of cars and locomotives which tell of use in the wrong place and of improper handling in the proper place. In addition to testimony of the above character the scrap pile affords valuable testimony as to the efficiency of the men who make the scrap. From one man is received nuts and bolts which, although they have seen service, are still perfectly good for further use. One shop will send to the

of iron to the requisite diameter. With this arrangement it is the opinion of the writer that the necessity for the purchase of any new iron for the purpose of making bolts will be entirely obviated.

It will be found in sorting over bolts and cutting them to the desired lengths, that there is a large accumulation of stub ends which are too short to be of value in making bolts. All the stub ends $\frac{3}{4}$ in. in diameter, and $\frac{5}{8}$ in. long, answer perfectly for the manufacture of track bolts. One of the bolt-heading machines has been equipped with dies suitable for forming the head of track bolts, and in this way a large quantity of track bolts have been made out of what was otherwise strictly waste material. With the rolls above referred to, it is believed that a sufficient supply of $\frac{3}{4}$ -in. iron will be obtained to furnish all track bolts required. The above covers our process of handling scrap bolt material.

Nuts are collected and assorted very much the same as bolts. One of the bolt-heading machines has been fitted up with dies suitable for compressing the nuts slightly. A compression sideways of about 1-32 in. is sufficient to close the nuts so that, in retapping, a nut with a practically full and perfect thread is obtained. It has been found desirable to pickle the nuts in a weak solution of hydrochloric acid, in order to remove rust and thus prevent undue wear of the taps. With our present arrangements the results obtained from handling the second-hand nuts is not as satisfactory as is the case with bolts. In following up the assorting of nuts one bin was se-

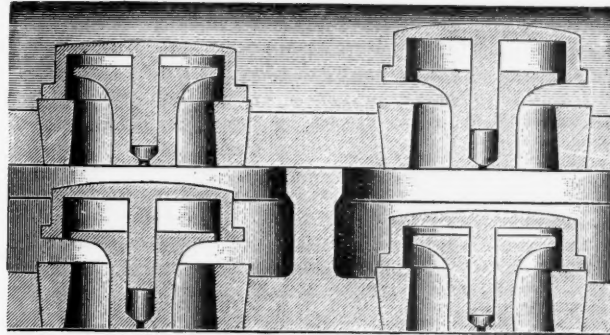


Fig. 3.—Sectional View of Water Valve.

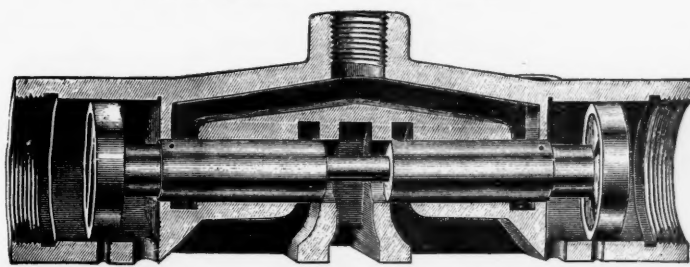


Fig. 2.—Steam Chest and Valve.

scrap pile pieces of stay bolt iron just a little too short to be utilized for a stay bolt, while from another the waste stay bolt end will have but a few threads on. In hundreds of ways the scrap pile tells the story of thrift and intelligence, or the reverse, on the part of the men who have charge of the mechanical work along the line of the railroad.

Another point which lends a great interest to the scrap pile and one of great practical value, is that much of the material found in it can, for a small sum, be utilized for purposes akin to its original use and be fully as serviceable as new material. The definite question to be discussed in this paper is "How shall the scrap pile be handled to make its information most available, and to utilize such material as may be made serviceable with a small expenditure of money."

In the first place, all material unfit for further use should be shipped to one central point, which should be located at the main shops.

Second. While it is not necessary to assort this material as carefully as the new material in the store-house is assorted, there should be a better assortment than the one usually prevalent of Wrought scrap Nos. 1 and 2, Busheling scrap, etc.

Third. Special attention should be given while unloading to sorting out good material and what is readily convertible into good material.

Fourth. Methods of handling the second-hand material should be carefully worked out and the cost carefully scrutinized, or rejuvenating material will become a matter of sentiment rather than one of profit. For the proper assorting of material a series of suitable bins should be provided, varying in capacity to meet requirements. In handling bolts, for example, a bin is required in which all bolts are deposited as unloaded. The crooked bolts are taken to the blacksmith shop to be straightened, and they and all straight bolts are then taken to the storage bins. These bins are divided into compartments so that all old bolts of the same diameter, and which will make good bolts of equal lengths, are placed in one bin. These compartments are all labeled. The bolt bins are located conveniently to the shop in which the machinery for cutting round iron and threading bolts is located. When the shop receives an order for, say 100 bolts 1x10 in. in length, a hundred bolts are taken from the compartment labeled 1x10 in. These bolts are taken to the shears, and, if any longer than 10 in., the surplus metal is sheared off. They are pointed and threaded and are then in shape to be shipped. The difference between the cost of bolts obtained in this way and bolts made from new material, is just about the difference between the cost of new round iron and scrap.

Since this process was inaugurated but a small quantity of round iron has been purchased; the amount of purchases by the Chicago, Milwaukee & St. Paul Co. since Jan. 1, 1894, to Nov. 15, 1894, is 154 tons. The purchases are confined almost entirely to iron $\frac{3}{4}$ and $\frac{5}{8}$ in. in diameter, the supply of old bolts of these diameters being insufficient to meet requirements. In looking over the scrap pile a large quantity of round iron, varying in diameter from $\frac{1}{2}$ to $1\frac{1}{2}$ in. is found, which, if rolled down to 1 in. and $\frac{3}{4}$ in. diameters would more than meet the deficiency referred to above. It is proposed to erect a set of small rolls for the purpose of bringing these odd sizes

lected for the reception of track nuts. As these began to accumulate it was noted that nearly all the nuts had stub ends of bolts in them. The first impression produced was that the wrenches used by the trackmen were long-handled, or the trackmen were unusually robust. A closer inspection, however, revealed the fact that each nut showed decided indentations on the outside. The trackmen found that the most expeditious method of removing the bolts was to administer a sharp blow with the spike maul. A man receiving \$1.50 per day can by this method remove at least 10 kegs of track bolts, worth about \$25, and he converts this \$25 worth of material into scrap worth to the company \$3 or \$4. The economy of the process is, to say the least, doubtful.

When the writer first proposed closing and retapping nuts, the objection was at once raised that much difficulty would be experienced with wrenches which were now adapted to the standard size of nuts. It was decided that it would not be necessary to reduce the nut more than 1-32 of an inch for successful tapping, and that this would not interfere seriously with the operation of the standard wrenches. What was our astonishment in commencing operations to find that the nuts varied from the standard size as laid down in our tables, as much as $\frac{1}{8}$ of an inch in width of head, and that it was necessary to assort nuts for the same diameter of bolts into at least four piles in order to use the dies successfully in compressing them; also that the weight of a hundred nuts from the scrap pile was nearly 25 per cent. greater than that of a hundred standard nuts.

There are large amounts of material which with a little shearing and straightening can be utilized for purposes which differ from their original use. Crown bar washers can always be supplied from clippings which would otherwise be waste material. Center pin plates in sufficient number to equip all new cars can be obtained from the scrap sheet iron pile for the cost of shearing and straightening. The most effective results so far have been obtained by sorting the sheet iron coming to the scrap pile with reference to its thickness and to a certain extent with reference to its condition. A washer punch in connection with the scrap sheet iron pile would undoubtedly furnish all the washers required by a railroad company for the expense of punching. This is especially true if a small set of rolls were at hand to bring the plates of varying thickness to just what may be required. Indeed a small set of rolls seems to be one of the most useful adjuncts to a railroad blacksmith shop and could be utilized in many ways besides those already mentioned.

The scrap pile in reality should include not only parts of machinery but also complete machines, cars and locomotives which are no longer fit for service. It seems to be the impression in the case of cars and locomotives that general rules for scrapping them can be elaborated in the office. Such rules fall far short of accomplishing their purpose and only a careful and judicious inspection, as in the case of any other material going to the scrap pile, can insure the best economy.

In order that the scrap pile may tell as complete a story as possible, all items of importance should be dated both when placed in service and when removed, and with many articles the name of the maker should also be designated. In this way many articles which are of scarcely sufficient

importance to warrant a systematic record could be made to furnish valuable information.

In conclusion, in order that the scrap pile may furnish as much information as possible and that the material therein may be fully utilized, it would seem that the following general principles should prevail:

First. The scrap pile should be in charge of persons of as much intelligence as is required for any position on the railroad.

Second. All material should be carefully assorted and placed in appropriate bins when deposited in scrap pile.

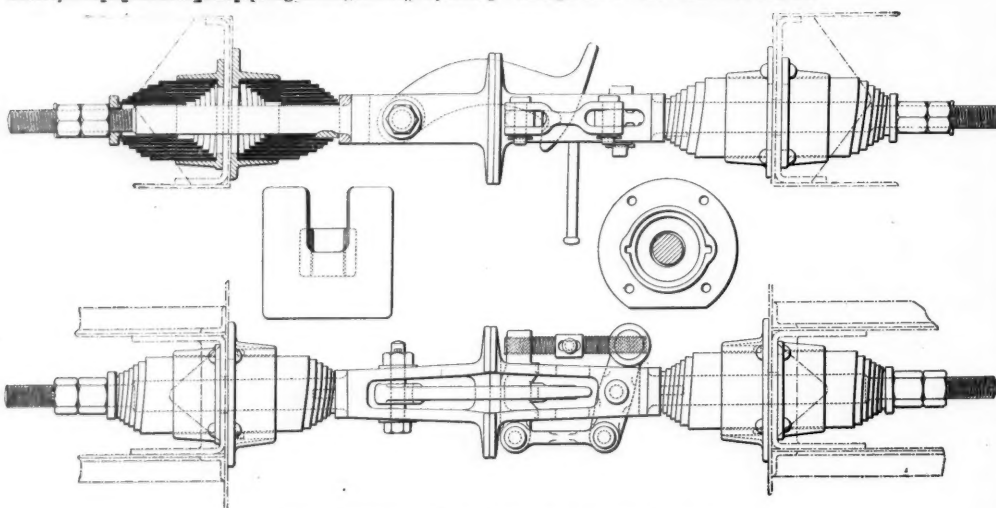
Third. All good material should be separated at the time of unloading from the scrap material.

Fourth. The method of handling the scrap material which is to be put to further use, should be as systematic and carefully elaborated as that of handling new material.

Fifth. The machinery for handling and rejuvenating scrap should require as much attention as that of the machinery for any other line of work.

Jones' Flexible Buffer and Coupler.

The combined coupler and buffer which is shown in the engraving is standard on the meter gage railroads of India. The engraving is from a lithograph sent to us some time ago by Messrs. Taite & Carleton, of London, who are agents for the sale of this device. We show it not with any notion that it is likely to be useful in the United States, but as a matter of mechanical interest and as actually useful to our foreign readers. The whole arrangement is so well shown in the engraving that no description is needed. The spring arrangement for buffing



'Jones' Patent Flexible Buffer and Screw Coupler.

Indian Government Standard for Meter Gage Railroads.

and pulling is essentially the same as has long been used on much of the English rolling stock. The arrangement for tightening up the coupler by means of the two levers connected on one side by a link and on the other by a screw with right and left threads, is also an adaptation of a familiar practice.

The M. C. B. Coupler in 1894.

At the October meeting of the Western Railway Club, a paper on the above subject was read by Mr. A. M. Waitt, General Master Car Builder of the Lake Shore & Michigan Southern. A discussion of the paper took place at the November meeting and the following is a synopsis:

MR. RHODES: When the Master Car Builders' Committee held their first joint meeting with coupler representatives at Pittsburg in the fall of 1891, at which meeting the practicability of shop tests was for the first time discussed, much wild work was talked over. I think that tests as outlined by the Car Builders' Association have enabled railroad men to distinguish more quickly than by any series of service tests, the difference between the weakest coupler and the strongest. All praise, therefore, should be given those manufacturers who have erected drop tests, bought pulling machines, established chemical departments, and in other ways are working hand in hand with the Master Car Builders' Committee in perfecting the Master Car Builders' coupler. There has been a laudable effort on the part of the M. C. B. Committee to make the character of their tests more in accordance with actual conditions of service. With this in view, the guard arm test and the jerk test have been introduced. The guard arm test is destined to prove of immense value in reducing guard arm breakages. Failures due to blows and jerks which occur when cars of different heights are coupled together, and when practically but one lug of each knuckle is engaged or buffed against has not received yet much attention at shop tests. The Interstate Commerce Commission have allowed a variation in height of 3 inches, viz.: Maximum empty, 34½ inches; minimum loaded, 31½ inches. We have lately had measured in Chicago without any special selection two cars each of between 30 and 40 different car owners, fitted with M. C. B. couplers—all bars were measured from the center of the knuckle opening to the top of the rail. The number found within the official limits is as follows: 10 at 31½ in.; 15 at 32 in.; 13 at 32½ in.; 16 at 33 in.; 6 at 33½ in.; 4 at 34 in.; 1 at 34½ in.; total, 65. The number not within the official limits was: 1 at 29 in.; 5 at 30 in.; 9 at 30½ in.; 12 at 31 in.; 2 at 35 in.; total 29. [Mr. Rhodes gave the initials, number, whether loaded or empty, and the capacity of each car.] There is a variation of six inches between the highest and lowest couplers. From this that much more attention must be given the height of M. C. B. drawbars; first, to conform to the requirements of the law, and, secondly, if we are to get in service even an approximate similarity of results obtained in shop and pull tests.

In regard to the character of the material used or to be used in bars, I am not prepared to go quite to the extent

of the statement in the paper. The tension test pieces taken from the bars that were tested at Melrose, showed such irregular fractures and so full of dirt and flaws, that no conclusions could be drawn from them; eleven of the 16 test pieces broke in flaws varying from 6 per cent. to 75 per cent. of the area of cross-section of test piece.

Of this number, 9, the total number of steel pieces, broke in flaws, whereas 6 malleable iron pieces, out of a total of 8, showed flaws in the fracture. We would eventually come to the steel for drawbars were it necessary to always concentrate both buffing or pulling strains on the unfortunate drawbar. But I do not believe this is the case. It is only the poorest kind of construction that makes it necessary to have the bar do both buffing and pulling. We will eventually have buffers for buffing work and drawbars for draft work. With the introduction of the M. C. B. bar, buffers were almost everywhere abandoned, and the narrow short horn back of the drawbar was considered a sufficient substitute. Some of the lines in the East are again beginning to apply buffers. The private car owners are following suit, and, best of all, one at any rate of the coupler manufacturers is putting on the market spring buffers for the freight cars. This latter is a great step in the right direction. It will tend to do away with the ponderous drop test blows that have seemed almost a necessity, and will enable manufacturers to lighten rather than add to the weight of the already sufficiently expensive M. C. B. drawbar.

In reply to questions by Mr. Barr, Mr. Waitt said that on 403 cars, no knuckles and only four couplers were broken in six months' service. The cars were furniture cars, in interchange service constantly, and averaging 65 miles daily. Mr. Barr thought that a fair trial.

MR. BARR: Three cords made by various couplers on the C. M. & St. P. for the last ten months are given below: The statement includes repairs on our own and foreign cars. (See tables A and B).

information is not of very much value. The first two or three years on a car, nothing practically gives way, unless the car is in a wreck or badly handled in some way. It is after that that trouble begins, and I do not see that we should make an exception in the case of couplers.

MR. WAITT: I think that the coupler manufacturers have been honestly trying to distribute their metal in a better manner in their castings, and to improve their material, and trying to make a coupler that would stand any service and not break.

TABLE A.—SUMMARY OF M. C. B. COUPLERS BROKEN DURING THE FIRST TEN MONTHS OF 1894.

Breakage.	Janney.	California.	Gould.	Chicago.	Columbia.	Mather.	Drexel.	Miscel.	Total.
Guard arm.....	728	3	56	27	20	1	2	5	842
Top lug.....	47	5	5	2	1	.....	.....	4	59
Bottom lug.....	22	3	5	.....	2	.....	.....	1	41
Both lugs.....	1	.....	28	.....	3	.....	.....	1	33
Head broken off.....	48	4	1	1	1	.....	.....	5	60
Front wall.....	38	1	.....	1	3	.....	.....	1	44
Back wall.....	2	4	3	.....	2	.....	.....	3	22
Side wall.....	23	1	26	1	.....	2	3	8	63
Neck.....	6	1	2	.....	2	.....	1	1	13
Shank.....	48	.....	9	.....	1	.....	.....	.....	58
Missing.....	8	1	1	.....	2	.....	2	4	14
Miscellaneous.....	8	.....	.....	.....	.....	.....	.....	.....	8
Lock pins.....	8	.....	.....	.....	.....	.....	.....	.....	8
Total.....	983	14	140	33	34	7	10	40	1,261

TABLE B.—STATEMENT OF M. C. B. KNUCKLES BROKEN DURING THE FIRST TEN MONTHS OF 1894.

Breakage.	Janney.	California.	Gould.	Chicago.	Columbia.	Mather.	Drexel.	Miscel.	Totals
Pin hole, upper lug..	439	22	43	8	2	5	6	16	541
Pin hole, lower lug...	50	7	6	.....	.....	1	3	2	69
Pin hole, both lugs...	56	4	2	.....	.....	4	2	2	73
Upper lug.....	330	15	58	.....	4	12	3	2	474
Lower lug.....	136	8	10	3	1	4	.....	5	167
Both lugs.....	40	3	4	2	2	1	4	5	61
Tongue.....	15	2	9	3	.....	3	5	8	37
Missing.....	150	14	1	1	1	2	1	3	183
Miscellaneous.....	55	4	10	1	1	1	1	10	83
Total.....	1,271	72	156	45	11	30	24	79	1,688

The total number applied and removed and percentage of removals to number of applied for the first ten months of 1894 are as follows:

TABLE C.

Name of Coupler.	Number Applied.	Number Removed.	Percentage.
Janney.....	14,584	902	6.18
California.....	2,564	12	0.47
Gould.....	1,182	40	3.38
Chicago.....	182	15	8.24
Columbia.....	472	23	4.87
Mather.....	200	6	3.33
Drexel.....	180	2	1.12

Knuckles break generally in the pin-hole of the upper lug, 455 out of a total of 1,377; the next weakest point is the upper lug, out of 1,377 knuckles, 359 broke in this place.

MR. RHODES: Some of the coupler manufacturers are now putting the month and the day and the year on every bar they turn out. I hope every manufacturer will in the future have pride enough in his couplers to put the date on them and then we will know how long they stay in service and get better results than heretofore.

MR. SCHROYER: Our reports show that in 1891 we had on one of our divisions, where certain cars with M. C. B. couplers ran exclusively by themselves, 2-10 of one per cent. of the bars broken per month. On the balance of the system there were about 1,100 of the cars running, and there we had 2 per cent. of the bars broken. The figures continued decreasing, month after month, until to-day, when we have 15,000 cars, equipped with the automatic bars, the breakage of the bars on cars running indiscriminately is 2-10 of one per cent., or just what it was when we started where the cars ran together. Where the cars are now running together the percentage does not average over 1¼ cents a car per month for replacement of breakages, while on the other cars it averages 4½ cents per car. The cost of maintenance of this equipment, as against the link and pin bars, with the links and pins, is steadily getting less in the M. C. B., and the cost of maintenance of the links and pins is constantly less.

MR. MITCHELL: The M. C. B. bar should not be increased at this time, as a great many of us have not room enough between our draft timbers and center sills to apply a wider shank. The correct way to strengthen this would be to apply a strap yoke coupler, and rib the bar internally, and I think it is the thing to do. I have confidence enough in steel bars to put on the bars of one steel company's make on 75 cars this year, and expect to get good results from them. Last year we put on 125 bars of another kind made of steel. In that way I hope within a year to get some comparative results.

MR. MCCONWAY (McConway & Torley Co.): I am not a believer in drop tests for the Janney coupler as indicating its actual strength in service, because the results under the drop bear no sort of relation to results observed in actual service. Under the drop the fracture is, as a rule, in the shank. In actual service out of every 100 breakages, 54-100 only break in the same section; or to state it otherwise, 230 couplers must run one year for one shank breakage. This result is taken from our latest tabulation, based on all the breakages attending the service of 340,790 couplers in service an average of three years and four months.

I am not a believer in the pulling test for the Janney, and am influenced by the same cause. In the pulling machine failure is at the point of the knuckle, about two inches back. In service the relative frequency of this breakage, on the same tabulation already mentioned, is 79-100—practically eight-tenths of one per cent. of the total breakage; or, otherwise stated, 917 knuckles must run one year for one breakage at this point. The cost of maintenance of the equipment of 170,395 cars, has been 83.2 cents per car per year. We have in service included in the above, 53,000 cars which have now an average of one full year's service at a cost of 37.39 cents per car per

marked increase in the material in the past year is not based on couplers put in three or four years ago which broke during the past year; the experience is based on what were put in in the last year and broke the last year, and they are so far ahead of those made three or four years ago that the two are not to be compared.

MR. BARR: If we confine our information to-day to the couplers that have been made since January, 1894, the

year. The shank failures of these couplers according to the same tabulation is one breakage for every 526 couplers in service one year. We are advocates of the adoption of a uniform system of replacement prices, not "on its own cars on its own road" only, but for any car on any company's road, the company breaking having the right to replacement at the stated price.

The accuracy or inaccuracy of joint inspection reports would then be of less consequence, and yet it may be remarked that an observation of the condition of cars passing any given point, with an actual count of the totals, ought to give relative conditions fairly well, although it can not give cost per car per year. Figures vary as between two points because of the varying conditions of handling cars and the rules prevailing as to what constitutes a defect to be reported. As an indication as to whether there has been any improvement in material and design the following percentage of breakages of parts for two different periods of time are given:

	1886 to 1894. per cent.	1893 to 1894. per cent.
Arm off.....	3.44	0.23
Arm cracked.....	0.92	0.15
Arm chipped.....	0.83	0.12
Face cracked.....	0.18	0.08
Back cracked.....	0.16	0.03
Back chipped.....	0.03	0.01
Back out.....	0.08	0.03
Upper lug off.....	0.49	0.22
Lower lug off.....	0.12	0.07
Both lugs off.....	0.10	0.05
Head off at neck.....	0.18	0.10
Barrel off at shoulder.....	0.21	0.09
Draft bolt pulled through.....	0.12	0.01
Miscellaneous.....	0.08	0.03
Total.....	6.94	1.22

MR. BARR: At present, as three years ago, guard arm breakages make up about 85 per cent. of the total breakages. At the introduction of the M. C. B. coupler, the guard arm breakages were not so frequent because the old style coupler would have to move over six inches to strike the guard arm while the M. C. B. coupler had to move over but 2½ inches. With the old coupler striking the knuckle there is less liability to break off knuckles than when the M. C. B. type of couplers run against each other. I know that the guard arm breakages increase as the number of M. C. B. couplers in service increases, and I do not believe that the knuckle breakages have been reduced except by the improvement in the details of manufacture.

MR. MACKENZIE: I have seen tests where two M. C. B. couplers were put together under the standard drop and they pounded the shafts all to pieces and did not hurt the guard arms, knuckles or anything else.

MR. BARR: I am speaking of their coming together when the knuckles are closed and they cannot lock.

MR. GENTRY: My experience on the Richmond & Danville with malleable iron has been such that we would probably think very hard before we would advocate a change from the malleable iron to steel. It may be that the steel makers are going to get up a successful coupler, and perhaps will hit on a mixture of metals other than they have had, but I feel very sure that if the railway authorities were asked to give their experience it would be quite largely in favor of malleable iron.

MR. SCHROYER: We have cars equipped with the automatic bars that run exclusively by themselves and they show only from ¼ to ⅓ the number of breakages that the bars that are running indiscriminately in general service do. They run in solid trains. Every trip they make they are switched about and switched together and if any of you know what it is to load an ore car at the mines and drop it down the inclines, you can tell something of the service they are subjected to. They do run together and they are switched constantly.

MR. WELLS (California coupler): If the guard arm breakage is going to increase as automatics are used; if the breakage of the guard arm, as already runs from 50 to 60 and 90 per cent. of breakages; and if the malleable guard arms are being made to-day just as strong as they can be made; and if the guard arm made solid in malleable iron would not be any stronger than it is made at present; do not these rather prove that steel guard arms are required. The reason why the California coupler stood 3 blows in the recent test, was not only because it was of steel, but because it was a box guard arm, and if the malleable iron coupler manufacturers made a box guard arm, they would make a stronger guard arm. All the information that the railway men can give to the coupler men that is definite and explains a particular point and part of the coupler that is injured—all that information is going to operate not only for the benefit of the coupler interest, but for the railways themselves, and I am very sorry that Mr. Waitt has not seen fit to give us the names of the other couplers as well as No. 23.

MR. McMYNN (R. W. Hunt & Co.): Drop, pulling and jerking tests will not test a coupler, in the same way as actual service does, but they will show the strength of material and design just as drop tests give an indication of the quality of car wheels. Car wheels have improved in quality since their acceptance has been made dependent upon drop tests and the same results would occur if couplers were purchased subject to passing machine tests.

MR. SMITH (Tower coupler): Machine tests will show the quality and disposition of the material, and both these have everything to do with the strength of the coupler. Malleable iron must be used in such sections and forms as will utilize the annealing principle to the utmost. It is not adapted for use in knuckles. The records made in tests by the Tower coupler we consider due to good material and good design. The purpose of a coupler is to couple cars and do it quickly and easily and as a machine ought to do its work. It was the question of eliminating shocks on freight trains that made the vertical plane form the standard coupler. It would be well if you gave some attention to the matter of practical tests in this direction and endeavor to learn what couplers are surest and best in their action.

C. H. FERRY (Chicago Tire & Spring Co.): Uniformly good material can be obtained only by testing in machines samples from each heat. The product should be thoroughly proved, before putting it into service. The M. C. B. tests have been greatly instrumental in saving the M. C. B. coupler. The cost of broken couplers is not the cost of couplers alone, but also the cost of delays, damage from accidents and other considerations. Let time determine whether good malleable iron or good steel is better, but adopt some test now. The drop test for couplers resembles more closely actual service, than the same test for wheels and axles. The selection of test couplers should be made similarly to selection of axles for tests.

MR. BARNES: No data have been presented upon the question of comparative design and method of knuckle opening. The following is what is known of the vertical plane coupler:

It is practically perfect in operation and is satisfactory when made of ordinarily good material.

It has all the necessary functions when made of four parts, namely, knuckle, pivot pin, lock and bar.

It costs in maintenance, when made of ordinarily good material, not more than ⅓ of the cost of keeping up link and pin couplers.

The weakest part of the coupler is the guard arm, and this should be strengthened, probably by lengthening the distance from face of knuckle to buffer stop.

When made either of cast steel or malleable iron it is strong or weak, according to the grade of material that is used. A practical test, made up first of the preliminary test, which shows what the material is, of itself, and the service test, which shows how the disposition of the material and the shape in which it is put is adapted to stand service usage are essential. Tests were not devised to duplicate exactly the condition of service, but to treat the material to the same class of stress which it meets in service. Couplers break in the drop test in the shank because they are supported on the end of the shank. They break somewhere else in service mainly because they are supported at a different point, namely, on the buffer-stop. This is one of the facts that was not stated and which puts a different face on the matter. Coupler heads in service most frequently break in the guard arm, and the drop test has shown conclusively that the guard arm is the weakest part of the M. C. B. coupler. Not far from this city there is a railroad company that has purchased a large number of couplers which will not stand three good lusty blows with a 20-pound sledge on the guard arm, and one of these couplers when tested in a drop broke up like a flower pot under the first blow at 5 feet and one of the pieces nearly killed a man who was 30 feet away. Facing this how can any one say that the M. C. B. tests are not useful as a means of preliminary examination? The reasons for the confidence that is placed in wheels and axles is found in the fact that these parts are made strong enough for the service. This is the way it will be eventually with couplers.

W. V. WOLCOTT (St. Louis Car Coupler Co.): The M. C. B. coupler of '94 not only shows marked improvements in increased tensile, drop and guard arm tests, but also a corresponding improvement in service test. The improvements have taken place without increasing the weight of the coupler and can be traced directly to a better distribution of metal and a vast improvement in material. Why relinquish this work. It takes at least three years to develop an M. C. B. coupler. There are many other points worthy of consideration aside from material.

First. The M. C. B. coupler contour lines should be strictly enforced.

Second. The number of parts; four principal parts are all that are required or desirable, as service records confirm.

Third. Construction; couplers should be so constructed that there is little or no pulling or buffing strains on knuckle pin.

Fourth. The lock should be without springs and

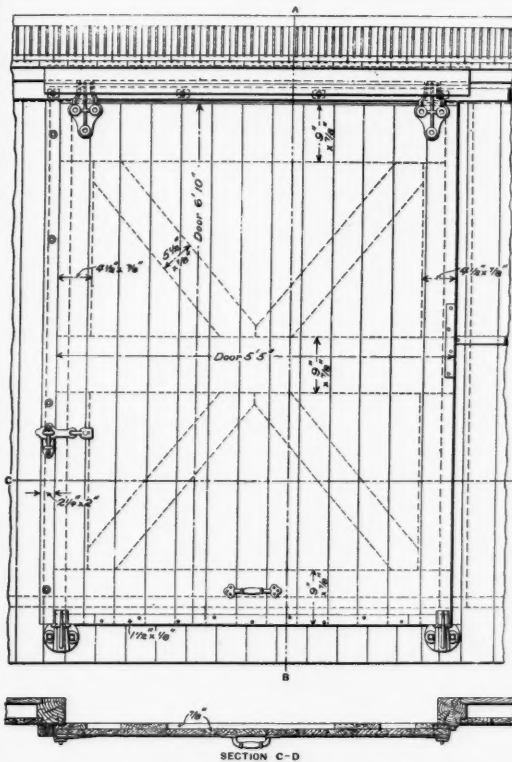


Fig. 1.—Standard Door for Box Car. Atchison, Topeka and Santa Fe Railroad.

should have not to exceed two parts—one would be better; the lock should be so located that the link from the old drawbar can not reach it.

Finally, I can not see any more necessity for an automatic knuckle opening device than I can for an automatic knuckle closing device; if the use of one is enforced the other will be for the same reason.

A. C. McCORD (Drexel coupler): There is a necessity for specifications of a standard drop. These specifications should cover not only the foundation, but the dimensions and style of guide and the manner of holding the bar, and the most important of all the shape of the striking face of the weight and material used in it, whether of steel or of iron, and the exact line at which it shall strike the knuckle in every case.

A. W. VAN DORSTON (Van Dorston Railway Supply Co.): In making drop hammer tests, the conditions count but for little in determining service conditions, or what the result would be should the same material be put into service. Such tests serve better as a guide to construction. Malleable iron no doubt will be the leading material on account of its cheapness. Steel may be preferred by some who care to pay the difference in the cost. Norway nail scrap makes much the best coupler of all other material, but is too costly for other than test purposes.

I heartily agree in making the bar stem in rear of the head 5½ inches square, but will here offer an amendment, to-wit: that the 5½x5½ in. shank be made the maximum and the present 5x5 in. shank the minimum.

Standard Box-car Door—Atchison, Topeka & Santa Fe.

The subject of car-door fastenings, hangers and brackets is now receiving some special attention, and Mr. J. J. Frey, General Manager of the Atchison, Topeka & Santa Fé, in a communication addressed to some of the railroad clubs and technical papers maintains that with a monkey wrench any practical mechanic can enter nine-tenths of the freight cars in a railroad yard inside of five minutes, and without breaking a door seal; that fastenings are put on with lag screws and bolts which may be quickly removed from the outside, and that, to enter a car by removing the stop, including staple, seal and pin, or the bottom rail or the brackets, or to lift the door bodily from its bearings requires but little ingenuity and the crudest tools. The Central Railway Club at a recent meeting received a report from a special committee and discussed the subject at considerable length. The discussion gave little praise to any of the numerous doors mentioned, and complaints were almost universal.

To prevent ready access to freight cars and thieving therefrom, the Atchison Road has adopted a new side door and a new end door. The end door slides in vertical guides and is fastened on the inside with a hook. If the door is not hooked its own weight causes it to slide down and open, thus revealing the fact that it is unlocked. It therefore requires no seal and relieves trainmen and seal takers of the difficulty of inspecting end doors. The guides are fastened from the inside, so that they cannot be removed from the outside.

The side door shown in fig. 1, is a plain sliding door without levers or special attachments. The bottom of the door is bound with strap iron and riveted through and through from back to front. A flat bandspring at the bottom corners wedges against the door guides or brackets and crowds the door tight against the side of the car, thus excluding cinders, dust and rain. The bottom door guide or bracket is the chief feature of the door. It is so attached to the car that it cannot be removed when the door is closed. It is made in two parts called the guide, fig. 2, and the wedge, fig. 3, which are dovetailed together. The wedge is first bolted to the sill with a flush bolt and the outer part of the guide is then engaged over the wedge and secured with lag screws. The guide cannot

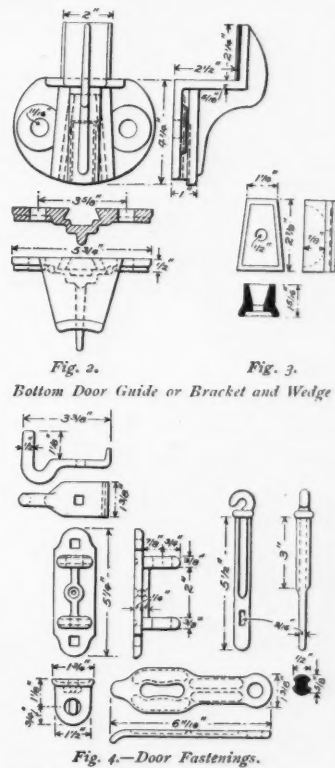


Fig. 4.—Door Fastenings.

be removed without first lifting it from the wedge, which cannot be done when the door is closed. The size of the guide and the wedging of the door at the bottom prevents its being lifted out of place.

The hasp and fittings, fig. 4, secure the door when closed. The bolt or pin is fixed so it cannot be taken from the staple. Flush bolts secure these fastenings and prevent their removal from the outside. The furnishings are all of wrought or malleable iron and the designs are a public property, not having been patented, which cannot be said of many other doors which possess some excellent features. If all the good points of the numerous doors in use were available and combined into one door, the lot of the car builder would be easier.

Annual Meeting of the American Society of Mechanical Engineers.

The fifteenth annual meeting of the American Society of Mechanical Engineers convened Monday evening at the house of the society, 12 West Thirty-first street, New York City. The convention opened with discussions on the subjects, "Are There Certain General Principles Un-

derlying the Proper Connection of Steam Boilers and Engines in a Power Plant?" and "What Form of Filing Cabinet Have You Found Most Convenient for Clippings, etc.?" The session adjourned after the appointment by the president of tellers to count the ballots for officers for 1894-95.

The meeting of Tuesday morning was called to order at 10 o'clock. This being the business session of the convention, reports were received from the council, tellers, the finance and library committees and professional committees. The tellers reported the election of the following officers: President, E. F. C. Davis, Richmond, Va., term expires 1895; Vice-Presidents, F. H. Ball, New York City; Jesse M. Smith, Detroit, Mich., and M. L. Holman, St. Louis, term expires 1896; Treasurer, William H. Wiley, New York City, term expires 1895; and Managers, John C. Kafer, New York City; Chas. A. Bauer, Springfield, O., and Arthur C. Walworth, Boston, Mass., term expires 1897. The retiring officers are: Eckley B. Cox, C. W. Hunt, Thos. R. Pickering, Edwin Reynolds, Jas. M. Dodge and Robert Forsyth. Mr. Wiley succeeds himself as treasurer, and Jesse M. Smith, who, under Art. 21 of the Rules, was ineligible for reelection as a manager was promoted to a vice-presidency.

Certain amendments to the present rules were then taken up and discussed. Mr. George Hill moved that the words "Associate Member" be inserted in Art. 3 of the new rules, making the article read "The Society shall consist of Honorary Members, Members, Associate Members, Associates and Juniors." The motion was voted down. Mr. Hill submitted several other important changes, which were not acted upon owing to the lack of time. The amendments as they stood were passed by unanimous vote, subject to a few unimportant changes in the wording suggested by Mr. G. C. Henning.

There are a few very significant changes in the proposed over the present rules. Article 2 proposed (present Art. 3) is made to read "all persons connected with engineering may be eligible for admission into the society," instead of, as at present, "Mechanical, civil, military, mining, metallurgical and naval engineers and architects may be candidates for membership in this society." In Article 4 proposed (present Art. 5) the words "who have virtually retired from practice" are omitted. In article 5, proposed (present Art. 4) a candidate must be not less than 30 years of age to be eligible as a member. Under proposed Article 6, a candidate to become an associate, "must be not less than 26 years of age." Proposed Article 8, reads, "All honorary members, members and associates shall be equally entitled to the privileges of membership." Proposed Article 9, makes it necessary that a nominee for honorary membership "be proposed by at least five members who are not officers of the society." In proposed Article 13 (present Art. 11) among other changes is added the sentence, "The rejection of a candidate by seven votes shall defeat his election." This is partially embodied in present Article 12 but there an exception is made in the case of honorary members, it requiring but three dissenting votes to bar an election to honorary membership. In proposed Article 16 we find that it requires the unanimous vote of the council to elect an honorary member. A proposed amendment to Article 35 is that the annual meeting of the society shall be held on the first Tuesday in December instead of the first Thursday in November.

Papers on "Relative Tests of Cast Iron," by W. J. Keep, and "Notes on Steel Forgings," by Geo. M. Sinclair, abstracts of which will appear in another issue, were then read and briefly discussed, after which the session adjourned. Many of the non-resident members spent the afternoon in visiting points of interest in and around the city.

The third session was called to order at 8.30 o'clock in the evening. Mr. M. N. Forney introduced a resolution, which was finally carried, relative to holding a number of monthly or more frequent meetings during the winter. The Council is authorized to appoint a committee to take charge of this matter for the society. It was suggested by a member that these meetings be held under the auspices of a club of members instead of the society, making it more of a local than a national affair. Last year similar meetings were held under direction of the society, but some of the out-of-town members objected, because no reports of the proceedings were published except in some of the journals, who got together and hired a stenographer for the occasion. These members objected to being forced to subscribe to a paper in addition to their dues to the society.

Following this two papers were read by Secretary Hutten. These were "Trials of a Vertical Triple Expansion Condensing Pumping Engine," by Samuel and S. S. Webber and "Tests on the Triple Expansion Engine at the Massachusetts Institute of Technology," by Cecil H. Peabody and E. F. Miller. There was no discussion on these subjects. Dr. Thos. Egleston then read a report on "Gages for Thickness of Metals," which was accepted. By this report one one-thousandth of an inch is made the standard minimum of measurement.

Two papers were then read by Mr. F. W. Dean on "Trial of a Leavitt Pumping Engine," and "Trials of a Recent Compound Engine with a Cylinder Ratio of 7:1," and discussed as one paper. Mr. Dean then read another paper on the subject of "Changing the Suction System of a Pumping Engine." The meeting adjourned with a paper on "Tests of the Strength of Spruce Columns," by Gaetano Lanza.

New Interchange Scheme for Chicago Railroads.

The Committee of the Western Railway Club which had under consideration the preparation of a code of rules, to be auxiliary to the Master Car Builders' rules of interchange, made its final report at the November meeting of the Club. The rules, as presented by the committee, are given below. These are intended to facilitate interchange at Chicago, to prevent unnecessary repairs to cars, which are frequently made under existing rules to get the cars past inspection points and to get some information on this scheme of interchange to present at the next meeting of the Master Car Builders' Association. It is the intention if these rules work advantageously at Chicago for several months, to urge the passage of similar rules at the Association meeting. Following are the rules adopted:

We, the undersigned, on behalf of our respective roads, agree to interchange cars with the understanding that, in addition to the defects enumerated in Rules 7, 8 and 9 of the M. C. B. Rules of Interchange for which owners are responsible, the following items shall also be treated in the same way, viz.:

1. Couplers or Drawbars, Drawbar Springs, Drawbar Pockets or Spindles, or their substitutes.
2. Draw Lugs and Attachments, Draw Timbers or their substitutes.
3. Dead Woods or Buffers.
4. End Sills.
5. Longitudinal Sills.
6. Cracked End and Corner Posts.
7. Any Parts of Truck, including Brake Beams, and attachments, failing under fair usage.
8. Center Plates and all Body Castings.
9. All Bolts.
10. Roofs and Running Boards defective.
11. Loose and Decayed Sheathing or Fascia Boards.

It is further understood and agreed:

First. That if the damage exceeds the items enumerated under No. 1, so as to include any or all of the items under head of No. 2 or 3, that in such case the damage shall be considered due to unfair usage, and no bill shall be rendered; the same agreement to govern in items 2 and 3. Also, that in the case of longitudinal sills no bills shall be rendered for replacement of more than two sills.

Second. That cars which are the property of the Railroad Companies, parties to this agreement, shall be interchanged between the parties hereto without requiring cards for defects which may exist in the parts enumerated above.

Third. That in receiving cars from Railroad Companies, not parties to this agreement, or in interchanging cars not belonging to parties to this agreement, the Rules of the Master Car Builders' Association for the interchange of traffic shall prevail.

Fourth. That nothing in this agreement shall be so construed as to require any of the parties hereto to accept cars which may in their opinion be unsafe to run or unsuitable for carrying freight, or with defects for repairs of which they are not authorized to bill, unless the party offering the car furnishes a proper M. C. B. defect card.

Fifth. That in case any party to this agreement should be required to furnish M. C. B. defect cards for any of the items covered by this agreement on cars owned by any party to this agreement, and a bill be rendered on such card, the bill and card shall be a voucher against the party owning the car for an amount equal to the amount of such bill.

Sixth. That if any party to this agreement should find it necessary to make repairs to any of the items covered by this agreement, the damage to said items not having been caused by collision or derailment, then and in such case the party doing such repairs shall have authority to bill against the party owning the car for the cost of such repairs, the charges for labor and material applied and credits for scrap or good material removed, being in accordance with Master Car Builders' Rules of Interchange, and the party so billing shall certify on the face of the bill that the damage billed for was not caused either wholly or in part by collision or derailment, and that there were no further repairs made or required in connection therewith, the certificate reading as follows: "I hereby certify that this bill is in accordance with special agreement for interchange of cars."

Seventh. That in case any party shall make repairs under this agreement, such repairs shall be made strictly in accordance with Master Car Builders' rules. Evidence that the repairs have not been so made will be authority for non-payment of bill, or for rendering counter bill in case original bill for repairs has been paid.

Eighth. When repairs are made under this agreement the party making such repairs shall immediately notify the owner of the car, giving date, place, and nature of repairs.

Ninth. In case any party to this agreement may desire any other party to hold material removed from cars, under this agreement, for inspection, the same shall be held, after notice has been received, for a period not exceeding thirty days subsequent to the date of repairs to such cars.

Tenth. Transfer roads may become a party to this agreement by assuming responsibility for any new defects which may be caused while cars are in their possession; but shall not be authorized to bill for repairs made under this agreement.

Eleventh. That there be an Executive Committee of five appointed to whom disputes shall under this agreement be referred, their decision to be final and binding; also to make rules for the transaction of the business of this Association.

Twelfth. Bills for repairs should not be made for damage when there is any evidence of carelessness in handling the equipment.

Thirteenth. Any railroad may become party to this agreement by notifying the Chairman of the Executive Committee and signing agreement.

Fourteenth. That this agreement may continue indefinitely, and that any party hereto may withdraw from the agreement by giving notice to that effect in writing to Chairman of Executive Committee, said notice to be given at least thirty (30) days prior to the date on which such withdrawal goes into effect.

The Executive Committee chosen was J. N. Barr, Chairman; W. Lavery, A. M. Waitt, W. Garstang and P. H. Peck, and this committee was directed to arrange details for a permanent organization.

(Signed)

J. N. BARR,
A. M. WAITT,
JOHN MACKENE.

The following 12 roads have already agreed to enter into the arrangement: The Lake Shore & Michigan Southern; Chicago, Milwaukee & St. Paul; New York, Chicago & St. Louis; Cleveland, Cincinnati, Chicago & St. Louis; New York, Lake Erie & Western; Louisville, New Albany & Chicago; Chicago Great Western; Wisconsin Central; Chicago & Western Indiana & Belt; Illinois Central; Chicago & West Michigan; Elgin, Joliet & Eastern.

A Traveller's Tale.*

In the course of the last few weeks I have travelled from London to Buda-Pesth and back. En route I have made a series of mental notes on Continental methods as compared with English.

As everybody knows, in Belgium the through main lines belong to the State. Scattered over the country, however, there are a number of private lines—some of them by no means unimportant. I travelled on one—the Waesland Railway—from Ghent to Antwerp. The line is only metre gage, but carries a very large traffic, and pays a very handsome dividend, I believe. Perhaps the most

*Some notes from recent articles in *Transport*.

interesting point about it was that on this narrow-gage local line trains travel as fast as do the International expresses from Amsterdam to Paris over the Belgian State Railroads between Antwerp and Brussels, the two chief towns of the country. Another fact was also interesting. The State railway season tickets which allow the holder to travel all over the system for a fortnight, in return for a payment of £2 first class, 30s. second class, and £1 third, are becoming enormously popular, and every commercial traveler in the country seems to take them as a matter of course. Now between Ghent and Antwerp there is, in addition to the direct Waesland line, a round-about route forming a part of the State system. The Waesland Co. accordingly ran the risk of losing its habitual passengers if it continued to charge them the ordinary fares. It has therefore introduced a system of selling tickets at half-price, provided they are bought in bundles of at least a dozen. 1s. 3d. first class, and 10d. second is a price that no one need grudge for a journey of 30 miles, even though it be that he could travel gratis by spending another hour on the road.

At the Antwerp Exhibition there were on view some very interesting specimens of modern rolling stock. A six-wheel corridor coach of the Paris & Lyons Co., showing all the finish and careful attention to detail that usually marks French railway carriage building, took my fancy particularly. . . . But corridor carriages were by no means confined to the Antwerp Exhibition. Everywhere on the Continent they are coming into use for long distance express traffic. In Hungary they seem to run almost nothing else, and alike in Austria and South Germany, in Prussia and in Belgium, one found them on the important trains. The Continental carriage builders, less conservative than our own home companies, have not hesitated to abolish altogether, in the case of these carriages, side doors and the footboards along the outside as well. The consequence of course is that they are able to give much more room internally than we can afford. . . .

You have once or twice lately given space to the doings of the International Sleeping Car Co., and have chronicled the drop which has recently taken place in the value of its shares. Judging by my own experience, I confess I should be surprised if the shares of so badly managed a concern did anything else but drop. The company appears to maintain an expensive office in every important town in Europe. For what purpose it is really difficult to understand. I went on a Monday morning to the office at Cologne, and asked to have berths reserved on the following Wednesday evening in the sleeping car from Mayence to Vienna. That, I was told, was impossible, "as the car did not start from Cologne." "Possibly," I suggested, "but surely one office of the company has means of communicating with another." This seemed to strike the clerk as a new suggestion, and he undertook to telegraph at my expense—every word at full length, a code being apparently a thing unheard of—to the office at Mayence. When the telegram came back—also at my expense—to say that the berths were available, he would then be good enough to receive my money. This conversation took place at 10 a. m. I revisited the office at frequent intervals in the course of the morning, finding it as a rule left in charge of a nice little boy of 14. But when I left Cologne at 3 o'clock in the afternoon, no answer had been received. Whether it has arrived there yet I cannot say. The following morning I renewed my attempt at a yet more imposing office in the chief street of Frankfurt. There I was met with a point blank refusal. As I proposed to travel by a car which started not from Frankfurt at all, but from a town nearly 20 miles off, the Frankfurt office flatly refused to be bothered with me in any way whatever. So at last I took the matter into my own hands, sent my own telegram, reply paid, direct to Mayence, received an answer that the berths should be reserved, and only paid for them on entering the train. In future I shall know how to act in similar circumstances. In fact, from the passenger's point of view, a system by which he reserves his berth beforehand, in case he should want it, but can only be caught and made to pay for it if he actually uses it, has had a good deal to say for itself. One would, however, have thought that the interest of the sleeping car company lay in the direction of making sure of their payment beforehand.

I paid some attention to the condition of the permanent way in the different countries through which we passed. In Belgium the standard of maintenance is evidently higher than in Germany. In Germany itself one saw marked differences in passing from one "direction" to another. For example, the Prussian Rechts-Rhinesch and Links-Rhinesch were both very fair. The lines of the Frankfurt "direction," on the other hand, were shockingly bad. This particular district seemed to be a perfect museum of permanent way experiment. There were wooden sleepers in all stages—some of them pretty far advanced—of rottenness. There were steel cross sleepers and steel longitudinal of various patterns; on none of them, as far as I saw, could a light train run at a speed of five and twenty miles an hour with any decent approach to smoothness. On the Hessische-Ludwigs-bahn the maintenance was better. Down in Bavaria it relapsed once more, to rise again to a much higher standard in Austria and Hungary.

I tried to understand the German signalling system, but without success. Their point of view is evidently quite other than ours. At the head of one of the platforms in the splendid new Frankfurt station I found empty carriages standing on a siding connected with the main running lines by ordinary throw over points entirely unlocked and that anybody could have shifted. Close by, other apparently similar points were locked and bolted, and could only be shifted by the signalman in his cabin. Frankfurt station would certainly make the mouth of any English superintendent water. The refreshment rooms alone—why should the German refreshment rooms, North German especially, be so immensely superior to ours?—are twice as big as the great hall at Euston. And what would not the station masters at our great terminal stations here give to have sufficient space available to be able to put in a broad platform on each side of every individual line of rails, and always to be able to reserve that line for the same train service? . . .

No one who travels on the railroads along the Rhine can help being struck with the enormous development of river-borne traffic in recent years in Germany. The Germans have, I believe, about two and a half million tons of vessels exclusively devoted to inland commerce, and that this traffic is profitable to the carriers no one can doubt who sees that almost the whole of the boats engaged are of the most modern construction. I stood on the bridge at Cologne and watched a great tug, which would not have been out of place helping Atlantic liners in and out of the Liverpool Docks, steam slowly up, towing behind her with steel hawsers four brand new steel barges, each of them carrying certainly not less than 300 tons weight of cargo. And this was only a type of scores of similar flotillas that I saw afterwards. On the railroads along the banks on the other hand the goods trains were few and far between, and what traffic there was seemed to be mainly to and from the wharves on the river. Cer-

tainly in Germany the waterways are beating the railways. Whether that, however, is owing to the economic superiority of the former or only to the stepmotherly fashion in which the State railroads are treated by the German Government is a question much too large to be raised here.

At Buda-Pesth I had an experience which is likely, I think, to remain unique. I traveled 14 miles in the space of three hours, twenty minutes. It came about in this wise. There was an International Congress meeting at Buda-Pesth, and in connection with it about 3,000 guests were invited to visit the Hunyadi-Janos bitter springs, distant by rail some 6 or 7 miles from the town. The invitation cards stated that special trains would leave at 3 and 3.15 p. m., returning at 6 and 6.45 respectively. This programme, as far as I saw, was carried out in the following fashion: I arrived at the Buda-Pesth terminus at about a quarter to three. The first thing I noticed was that the whole of us, though we were all furnished with badges worn in the buttonhole to signify our right to enter the special trains, had to pass through the single door of the first-class waiting-room. Having fought our way through on to the platform we then circumambulated the station to reach a distant platform. There we stood for some time sweltering with the thermometer at 94° F. in the shade.

At four minutes past 3 a train of 20 coaches backed in for our use. Into it we crushed and jostled like East End costermongers at Chingford when the evening of a Bank holiday sets in wet. Having got in, we sat or stood where we were for half an hour, during which nothing at all happened. About half-past 3 a second train backed in. It also was immediately crammed to the doors. After a further wait this second train pulled out of the station, its occupants pointing the finger of scorn at those in the first train who had fancied they would get off in front. But pride as usual had a fall, and train No. 2 was checked at the end of the station yard, and then at length sent back ignominiously to pick up train No. 1. Finally about 4 o'clock we started with 41 coaches on, many of them pretty big ones. It says much for the locomotive department that the single engine was able to haul us to a junction some four or five miles off, part of the way up a quite perceptible incline, at an average speed of nearly 10 miles an hour.

Arrived at the junction, yet new surprises were in store for us. We had only been standing there a mere quarter of an hour when a third train arrived from Pesth with its engine all decorated with flags and branches, presumably in honor of the successful execution of the previous manoeuvres, but its carriages mainly empty. Then our train was divided, and the front half sent on to the destination, which was on a single line. The second half, however, was not allowed to follow till the front portion had, after exercising a series of complicated shunting operations got itself put away in some distant sidings. The idea that, as the running line was blocked in any case, and as therefore no traffic could possibly arrive in the "up" direction, the first train might just as well run forward a few hundred yards beyond the station, so as to allow train No. 2 to follow immediately, does not seem to have suggested itself to any official. It was ten minutes to five before I got out of my train. Whether the occupants of train No. 3 ever reached their destination at all, I was too hot and thirsty to stay and inquire.

The return journey, I am glad to say, was comparatively rapid. Train No. 1 backed down from the junction to the platform precisely at 6.30, the hour at which it was timed to start. I sprang in, and history repeated itself. After a pause of half-an-hour or so, we were pushed back up the line beyond the station to let in train No. 2, which loaded up and went off to Pesth in front of us, while we were left to ponder the truth of the Scripture maxim, which declares that the first shall be last, and the last first. But after all it was only 8 o'clock when we reached Buda-Pesth. A Hungarian gentleman who was in the same carriage with me assured me that this experience was nothing unusual when special trains were run on the Hungarian State lines. He added, "You don't manage things like this in England, do you?" I regret to say I was rude enough to reply, "Thank God! No."

A New Railroad Into London.

The formal breaking of ground for the building of the tenth trunk line railroad into London occurred the third week in November. This is the extension of the Manchester, Sheffield & Lincolnshire, the struggle for which began more than 20 years ago. The company will build an independent line of 98 miles from Annesley to Quainton Road, a few miles northwest of London, whence it will enter the metropolis by running powers over the Aylesbury branch of the Metropolitan. Contracts for the new road have been let and the time allowed for completion is two years and a half, so that before the end of 1897 it is expected the new line will be running into London. The Manchester, Sheffield & Lincolnshire owns absolutely 353 miles, and jointly 207 more, and it extends right across the north of England, reaching such important towns as Liverpool, Manchester, Sheffield, Leeds, Doncaster, Hull and Grimsby covering one of the most important manufacturing regions of the world.

The Earl of Wharnccliffe, now Chairman of the company, presided, and Sir Edward Watkin, the late Chairman, was an important figure on the occasion. The Countess of Wharnccliffe cut the first sod, which she wheeled to the end of a 22-ft. plank and dumped, we suppose, on the spoil bank. The spade and wheelbarrow which she used are described at considerable length in some of the English journals. As they were made mostly of oak and silver they probably were not taken out of the contractor's stock. The road will have its own passenger and freight terminus in London, covering altogether some 70 acres, and a large part of the line within the city will be underground. The new line passes through such important towns as Nottingham, Leicester and Rugby.

TECHNICAL.

Manufacturing and Business.

The Mobile Coal Co., Mobile, Ala., is making extensive improvements in the facilities for handling coal at its large yards and docks, which, when completed, will enable the company to transfer 3,000 tons a day quickly and

cheaply. For the rapid unloading of coal from the vessels there has just been installed a Hunt coal-hoisting elevator of the latest type, designed by the C. W. Hunt Co., New York. This elevator will lift the coal from the vessel and dump it into cars on an elevated trestle by means of which it will then be carried into pockets for its storage or loaded on to cars for shipment.

The frog shop department of the Carlisle Mfg. Co., of Carlisle, Pa., has secured a contract to build 170 frogs from the Baltimore & Ohio.

The Face Hammered Solid Steel Car & Locomotive Wheel Co., with a capital of \$150,000, is applying to the Dominion Government for a charter. The object is the manufacture of wrought or forged steel wheels. J. A. Facer, of Philadelphia; E. Ramsden, Philadelphia; A. T. Wilson, W. Howe, J. M. Balderson and S. C. Wilson, of Perth of Ontario, are the applicants for the charter. The works of the company will be at Perth, Ont.

The Restaura Mfg. Co. is the name of a new concern organized for the manufacture of "Restaura," a compound for cleaning and restoring plush car seats to the original color. The offices and salesrooms are located at 41 Cortlandt street, New York, and the factory is at Brooklyn, N. Y. The officers are: T. W. Ridsdale, President, and T. A. Lewis, Secretary and Treasurer.

The Falls Hollow Staybolt Co., manufacturing the well-known mandrell-rolled hollow staybolt iron, reports a number of large orders received recently from the important locomotive builders and railroad companies for its safety hollow staybolts.

A charter was issued in Pennsylvania last week to the A. & P. Roberts Co., of Philadelphia, to manufacture iron and steel and structures of iron, steel or wood. The capital stock is \$1,000,000. Of the 10,000 shares of stock subscribed all but four are credited to Percival Roberts. Of these shares 9,000 have been issued to him as full paid in consideration of the conveyance by him to the company of the Pencoyd Iron Works, covering about 55 acres, and various properties. The Directors are Percival Roberts, Percival Roberts, Jr., and P. Williamson Roberts.

The Link-Belt Machinery Co., of Chicago, has made recent sales of the "Standard" water tube safety boiler, to the Carnegie Library, Braddock, Pa., 50 h. p.; Morgan Building, Buffalo, N. Y., 375 h. p. and the North Chicago Street Railway Co., Chicago, 3,000 h. p.

The Youngstown Bridge Co. has been awarded the contract for the 38th Street Bridge at Denver, Col.; the contract for a building for the new rolling mill of the Union Iron & Steel Co., at Youngstown, O., and for some girder work for the New York, Lake Erie & Western Railroad.

At a recent meeting of the Duval Metallic Packing Co. at 39 Cortlandt street, New York, Mr. Bradish Johnson Carroll was elected President and General Manager vice Thornton N. Motley resigned and Mr. T. W. Ridsdale was elected Secretary and Treasurer. The Directors are Mr. T. N. Motley, Mr. J. M. Motley, Mr. T. A. Lewis, Mr. J. C. Peabody, Mr. A. J. Caldwell, Mr. B. J. Carroll and Mr. T. W. Ridsdale. Increased facilities of manufacture have been arranged for permitting the company to offer the packing at a substantial reduction on former prices and to fill all orders promptly.

The Chicago Title & Trust Co. has filed a bill at Chicago to foreclose a mortgage on the property of the Grant Locomotive Works, and also asking for the appointment of a Receiver. The bill recites that on Dec. 7, 1892, the company issued bonds to the amount of \$200,000 at seven per cent. interest to secure capital with which to continue its business. The interest has been in default since last June.

Iron and Steel.

The South Steel Works of the Lackawanna Iron & Steel Co., Scranton, Pa., have suspended operations indefinitely once more from lack of orders.

On Nov. 26 the steel mill of the Bethlehem Iron Co. resumed operations, giving employment to 1,000 men.

The assignee of the New Albany rail mill has been directed by the United States Circuit Court to transfer the property to the St. Louis capitalists who recently purchased the plants at New Albany and Alexandria, Ind., for \$75,000. The plant at New Albany is to be removed to Alexandria and at once put in operation. The New Albany plant has been controlled by C. W. Depauw and was involved in the failure of the latter in July, 1893. Mr. Depauw had commenced the building of a new rolling mill at Alexandria, much new machinery being purchased, but part of the equipment was being removed from the New Albany plant. The failure came, however, before the removal from New Albany had been completed or before the Alexandria works had been put in operation.

The sale of the Wellman Iron & Steel Works at Chester, Pa., has been postponed from Dec. 17 to Jan. 10 by Receiver Broomall, on the guarantee being given by the unsecured creditors that they would make a bid higher than the bonded and secured debt, and in evidence of good faith they have given security in the sum of \$20,000. At the request of several Pittsburg banks, holding promissory notes to the amount of \$150,000, George S. Griscom, President of the Moorehead-McCleave Iron & Steel Co., has been appointed Receiver thereof. The company has a capital stock of \$1,160,000, divided into 16,000 shares. M. K. Moorehead owns 6,625 shares and George F. McCleave, 4,583 shares. The plant owned by the company consists of a blast furnace, five sheet mills, two plate mills, two

open-hearth steel furnaces, a galvanizing plant and 60 coke ovens, covering about 140 acres. The corporation is indebted in the sum of \$800,000, over \$500,000 of which is represented by negotiable notes outstanding.

The Chicago Consolidated Iron & Steel Co. has been organized at Chicago by G. B. Andrews, A. Alfonso Oldfield and Edward A. Biggs.

No. 1 furnace of the Thomas Iron Co., at Hokendauqua, Pa., recently rebuilt, last week produced 900 tons of marketable pig iron, the lower grades going direct from the cast house to the cars for transportation.

The South Steel Works, of the Lackawanna Iron & Steel Co., at Scranton, Pa., has suspended operations for indefinite period for lack of orders, 2,000 employees losing employment. The works have been running irregularly for the past year.

New Stations and Shops.

Ground was broken at South Cumberland, Md., Nov. 27, for the new shops of the Baltimore & Ohio. The roundhouse will be the largest along the system.

The Canadian Pacific has recently taken on 300 men in its shops at Montreal. Some 600 cars require repairing. A number of baggage and freight cars will be built in these shops this winter.

Architect Smith, of Boston, has drawn plans for the station and car sheds proposed to be erected by the Hamilton Radial Railway Co., at Hamilton, Ont. The buildings will cost \$75,000.

Interlocking.

The National Switch & Signal Co., Easton, Pa., has received an order from the Lake Street Elevated Railroad of Chicago, for an interlocking plant consisting of three machines, one of nine, one of seven and one of two levers each respectively.

THE SCRAP HEAP.

Notes.

The pattern shops of the Pullman Palace Car Co., at Pullman, Ill., were burned on the night of Nov. 27; loss, \$25,000.

Three members of the Cook gang of robbers were sentenced to long terms of imprisonment by the United States Court at Fort Smith, Ark., on Nov. 30. William Jennings has been sentenced to five years' imprisonment at Stevens' Point, Wis., for trying to wreck a train on Aug. 4.

A passenger train of the Southern Pacific was stopped by robbers near San Antonio, Tex., on the night of Nov. 28, but they failed to get any plunder. The fireman, whom they instructed to cut off the express cars, cut the air-brake hose and the robbers, after trying ineffectually to start the engine, became frightened and ran away.

The Cleveland, Cincinnati, Chicago & St. Louis has issued a circular to employees announcing that hospitals will be established by the company at several points on Feb. 1. The company now has 80 local surgeons and the Chief Surgeon, Dr. J. H. Ford, says that the number will be increased to 100. Dr. Ford's office is at Wabash, Ind.

The only State Legislature which has yet "opened the season" of railroad regulation is that of Georgia, which has been in session some time. A member has introduced a bill designed to spur on the Governor to prosecute railroads which buy or combine with the competing lines. In Illinois a bill has been prepared to present as soon as the Legislature convenes, reducing sleeping-car fares. In Missouri a convention of members from the principal railroad employees' brotherhoods has appointed a committee to present a bill to the Legislature, designed to make the fellow-servant law more favorable to employees.

American Society of Civil Engineers.

A group of gentlemen in Chicago have nominated, in proper form, Mr. John F. Wallace, Chief Engineer Illinois Central Railroad, as an opposition candidate for the presidency of the society. The regular candidate is, as all will remember, Mr. George S. Morison.

At the regular meeting of the society held last Wednesday evening, Mr. John Thomson read a very interesting and valuable paper on the development, design and construction of the platen printing press, illustrated by numerous stereopticon slides showing parts of the press, its mechanical movements and results obtained with it.

Trent Valley Canal.

The Dominion Government has awarded a contract for the construction for one section of the Trent Valley Canal, to Andrew Onderdonk, of New York. The contract covers the work from deep water in Balsam Lake towards Lake Simcoe for a distance of about 5½ miles. The specifications provide for a canal 50 ft. wide at the bottom. This division will cost about half a million dollars. The contract for the second division, Peterboro' and Lakefield, has been awarded to Hogan & McDonald, of Montreal, the price being about \$250,000. The section is some 3½ miles in length. Fifteen firms tendered for this work. Work on the Onderdonk contract at Balsam Lake is to be commenced at once and it is expected to have it completed by the opening of navigation. It consists mainly of excavation. One important feature of the contract is the proposed syphon culvert for carrying the waters of Green River underneath the canal.

Troy Non-Resident Lectures.

Mr. Foster Crowell will deliver the next lecture before the students of the Rensselaer Polytechnic Institute, in the current course, on Friday, Dec. 7. Subject, "The Handling of Men."

George S. Morison delivered a lecture before the students of the Institute, on Nov. 29. His subject was "Foundations," and included descriptions of those of the Memphis and other great bridges of which he has been the engineer.



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EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

One day this week bids were opened, (or were to be opened), by a certain road for 750 box cars. The road is now in the hands of receivers and is hardly in a position to indulge in luxuries. Nevertheless, certain parts of the specifications for these cars suggest a fine disregard of the element of competition that is one of the conditions of economy. We find for example that the following items are specified and must be used, the builders to pay all royalties on the patents and to protect the railroad company from all patent right claims: Fox pressed steel center plates; McGuire grain doors; Cleveland-Winslow metallic roof, made by the Paige Car Wheel Co.; Graham draft rigging and malleable iron drawbar stops; Standard couplers (cast steel), for one half the cars, with tail bolts and Graham cast steel followers; Dunham door fittings; Cleveland City Forge & Iron Company's turnbuckles; Pickering Spring Company's springs; Westinghouse air-brake; Burtis, Patterson & Sargent paint; National hollow brakebeam; Fox pressed steel truck; Brady Metal Company's journal bearings; vulcanized fiber dust guards; elastic wool waste packing; wheels to be furnished by the railroad company or by the builder, as agreed later. As a matter of fact the company contracted for the wheels with one concern. It may or may not be that each of these articles is the best of its kind and that the officers of a railroad company that can afford to pay for the best of everything would be justified in limiting the specifications so strictly; that is a question of policy. But at any rate it prevents competition in a pretty large percentage of the cost of the car, and shuts out the builder from making several of the specified articles which he could make perfectly well, and take the manufacturer's profit. One very experienced contracting car builder assures us that the cost of each of these cars to the road is increased over \$100 beyond what an equally good car could be furnished for, which amounts to the tidy sum of \$75,000 for this one contract. That car builder declined to bid, and presumably there are others who, like him, were unable to see the possibility of a legitimate profit in the labor and in the materials not absolutely specified. Indeed we have been told that an appeal has been made or will be made to the Reorganization Committee.

The proceedings of the American Railway Association at its October meeting were reported in the *Railroad Gazette* of Oct. 26 and Nov. 30, but there was an incidental discussion yet to be noted, that on the report of the joint committee on signalling. Perhaps the most interesting feature of this discussion was that giving the experience of the St. Louis people in introducing green lights for all-clear signals (page 24). This is the only place in the report where we notice the word "applause." Mr. Ramsey said, among other things, that enginemen mistook white back lights for white signals, the lights being electric. We surmise, however, that the difficulty would have been the same with oil lamps, for an oil flame may be very bright and white under favorable conditions. The trouble at St. Louis was largely due to a somewhat unfamiliar location and to the fact that the lines were nearly all curved*, but it is to be remembered that this unfamiliarity, in a milder form, is a danger

at many places. To guard against it is one of the objects of improved signals. In a considerable percentage of the collisions due to mistakes of enginemen in reading fixed signals, it is found that the man at fault was at least a little rusty in his knowledge of the location and meaning of the signals. In view of this it is clear that the St. Louis lesson has an application at many other places.

An interesting discussion was started on the committee's definitions of block signals and statement of principles to be observed in using such signals, but it ended in the air. The chairman of the committee adverted pointedly to the fact that not one member of the association had taken the trouble to sully with ink a single square inch of the considerable area of blank paper that had been sent out with the report a month before in the hope of getting suggestions and criticisms which would aid the committee in formulating the views of the members of the association. This is not much worse than the experience of other associations, but possibly this dearth of manifested interest is indication that the committee is working on wrong lines. The statement, made by one or two members, that principles applicable to all methods of working the block system could not be formulated, certainly is open to question. Some of the principles already stated by the committee are applicable to all, although, as intimated in the inquiry of the first speaker in this discussion, no clear definition of what a block system is for has yet been presented. A perusal of "American Practice in Block Signalling" (New York, 1891) might perhaps be suggested in this connection. Of the principles already set forth, the following ought to be as applicable to one plan or apparatus as another: Semaphore on right hand side of post; signals above or at the right of the track, and others in the same paragraph (page 16); advance signals to be located so as to permit switching. There are others which we will not stop to mention. That signals should be of prescribed form is also universally applicable, but we do not see what force there is in this clause. If it was put in to make the code complete, the statement of the object of block signaling ought to have been put in also. Why not also say that a horizontal square-end arm or a red light always indicates "stop?" The reader may answer that a code sufficiently general to be universally agreed to will be a very short one. Very true; perhaps the absence of criticisms from members indicates a demand for abbreviation. At all events there is no great profit in keeping before the association a committee report which the committee does not swear by, and which the association will neither accept nor criticize.

Judge Dallas has denied the petition of the Brotherhood brakemen at Philadelphia and sustained the Receivers. The substance of his decision is printed on another page. It will be seen that he politely ignores Attorney General Olney, as indeed, was proper in view of the fact that Mr. Olney's letter was only admitted after it was made a part of the argument of the Brotherhood lawyers. Besides this, the Judge plainly states that the whole discussion of the general questions presented by the petitioners (and those of Mr. Olney so far as they are touched upon) is by courtesy; the real issue did not involve their consideration. Judge Dallas does not controvert the main points of Mr. Olney's argument, but sets them aside on the ground that they have no application to this case, under the law. The essential points of the decision are that the Receivers' action is entirely within the law, and that when it comes to a question of business expedience they and not the Court must be the judge of what to do. Judge Dallas distinctly states that he does not feel competent to form an independent judgment on the question whether the rule excluding Brotherhood men will or will not harm the road; and as the Receivers unanimously say that it will not, he accepts their statement, the only evidence on the point, as conclusive. In this Judge Dallas agrees with the view of Judge Hanford, mentioned in the *Railroad Gazette* of October 19, page 722; and as we said at that time, this view is the normal one. The Court takes control for the protection of the creditors and its power should be limited to that function as closely as possible. The Court intervenes solely to enforce honesty and fairness; but even that simple requirement necessitates the employment of an expert railroad manager, and when such a man is found, there is no more reason for a jurist to interfere in the management of details not involving any issue on these points than would be the case if the Receiver were actual owner of the property. If the management already in power is honest and fair it is presumptively entitled to be continued. In this case the Receivers were continuing a long standing policy

of the company which no one showed to be harmful to it.

This question of harm to the company was the only point of Mr. Olney's argument which could seriously affect the main issue, as will be seen by a glance at his summary as printed in the *Railroad Gazette* of Nov. 16, page 784. He states his position in paragraph 3, viz., "the rule is of positively injurious tendency" as engendering disaffection, etc. But the Court may readily admit this point—and Judge Dallas does not say that he would not admit it—without deciding the case in accordance with Mr. Olney's wishes, for there was not a particle of evidence before the Court that the injurious tendency actually existed, although the rule has been in existence seven years. The Attorney General's other points are all subsidiary to this, and, indeed, deal entirely with that class of difficult questions of ethical or economic policy, which a court, striving constantly to stick to solid facts, always ignores if it can. Mr. Olney fully realizes this, as may be seen from the cautious language he uses. He laid strong emphasis on the fact that the Court was running the railroad; but Judge Dallas is right in running it as nearly according to the established plan of its owners as, in justice he can. Mr. Olney, emphasized the good objects of the Brotherhood; but as we at the time pointed out, the Receivers must remember that these good objects are not very well attained. Brotherhoods do not practice what they preach. Mr. Olney said that breaking up the Brotherhood would not prevent strikes; very true, but in practice it may stave off the strike spirit, especially if at the same time the employer takes care to let no just cause for a strike arise. We can approve and admire the soundness of the decision without in the least modifying our approval of Mr. Olney's general position. A railroad manager should approve all well-intentioned unions among his employes, and he may even go farther and encourage them, in perfectly legitimate ways, beyond what official comity or right might call for; but while thus softening the iron hand of authority by the velvet glove of personal interest he must be on the alert to see that the good intentions are lived up to. The moment they are abandoned, he has to take off the glove in order to protect himself. The Reading's officers have a perfect right, in law, to pursue a severe policy, and they are doubtless sincere in believing that the only good brotherhood is a dead brotherhood. Moreover, those railroad managers who say sweet things to and about the brotherhoods and do not at the same time keep a sharp eye out for the evil agitators who masquerade under some brotherhood's good reputation, are laying up trouble for themselves. But the more enlightened policy is to recognize the right motives that lie behind the persistent disposition among employes to "organize" and to lend all possible aid in guiding these motives into right action.

Every year, "about this time," the restriction of passes must be agitated, and this year is no exception. We noted last week the present status of the agreement which the roads west of Chicago hope to enforce after January 1. This agreement is more carefully prepared than those of past years, which is saying a good deal. The exclusion of small roads is kept up and there seems to be a disposition to make this rule more effective. Some classes of hangers-on, who have been a considerable burden on the railroads for many years, are mentioned by name as those to which no passes should be issued, and this refers to trip passes as well as to time passes, with which the agreement more strictly deals. In fact, the agreement to give the Executive Committee supervision and conditional control over trip passes, as well as annuals is one of the best features of the agreement; it helps to check a fruitful source of abuse. Whether the railroads will carry out the agreement in any better faith than heretofore remains to be seen. We rather think they will. At any rate, like the landlord who sends an agent to collect the rent, even when he knows the tenant has no money (on the theory that the tenant must be kept from getting any worse than he is) the railroads must keep up the efforts to restrict passes, just to keep the idea alive until the ideal plan can be put in operation. As long as railroad managers are actuated by ordinary human sympathies there will be numerous applicants whom they dislike very much to refuse, although on business grounds they are compelled to do so. To meet this class of cases indirect repression must be used and always has been used. In the present agreement the referring of applications to committees and sub-committees is expected to have considerable effect on this line. A reporter out at Denver has been interviewing some of the railroad men there, and he finds that they are doing a heap of

*See *Railroad Gazette* August 24, page 575.

thinking on the subject. Among other things he learns that "hotel men are barred out entirely; and so are politicians." This last is probably a gratuitous addition by the reporter, but we hope the politicians will take it seriously. All others who desire passes, even down to trip passes, must first apply to the railroad and then await the decision of the Pass Committee. The application, after passing the Pass Committee, will go to the chairman at Chicago, and by the time it has gone thus far the passenger will conclude, thinks the reporter, that as the walking is good he had better go afoot, if he does not wish to go farther than from Denver to Boulder (29 miles). Even if the application can be decided by the Denver committee, the reporter thinks that there may be delays which will make the heart sick.

But the troubles of the people in Denver, or Chicago, or, for that matter, of all the dead-heads in the western half of the country, are but a feather compared with the weight of affliction which has fallen upon public officers and politicians in New York State where the new constitution, which goes into effect on January 1, has a prohibition concerning passes, which it is said cannot be broken through by the shrewdest lawyer. The New York reporters have printed columns of feeling "remarks" on the subject, and they conclude that the man who drafted this section of the constitution, did it with malice aforethought. It is true, says one, that the amendment only proposes to punish corporations, or their officers or agents, who offer or promise free transportation; but there is a provision of the Penal Code which makes a person who was formerly known as an accessory to a crime a principal, and a street car conductor who would permit a public officer to ride free would be as guilty as the man who did the riding. By a recent decision of a high court in New York, a policeman is a public officer, and cannot escape the restrictions which the new constitution places upon all public officers; and policemen ride free in New York by the hundreds or thousands of miles daily. Not only do they make short trips, but their rides to and from their homes on the elevated road are a material pecuniary advantage in a very direct way. Mr. Depew is one of the regents of the State University, and under a strict construction of the constitution he will have to resign that office or pay his fare on his own road. Of course he can pay and charge the ticket fares back to the proper party—to the road when on railroad business and to the State when on State business; but to the great mass of men whom the new law bears down upon such ethical distinctions would appear extremely finical and it is questionable whether they would carry them out, howsoever many shining examples like Mr. Depew might be held up for their imitation. Here is a dilemma for the casuist. There is some talk now of a demand from the New York Legislature for an increased mileage allowance now that the passes are cut off; but this will not quite fill the aching void. The beauty of the pass is that the law maker can get both pass and mileage. Another advantage is that passes, especially season passes, do not have any specific value set upon them, and, therefore, they can be stretched without stretching the conscience. One thing that now causes loud wailing is the loss of a convenient "pull" for getting passes of a kind still more illegitimate, like those for cousins, aunts and "friends."

Handling Air-Braked Freight Trains.

The somewhat extended controversy in regard to handling freight trains with the air-brake, which includes a communication in this issue, seems to call for the statement of a few practical facts. The proper consideration of such facts would seem to be all that is required to end the discussion.

It is a fact, beyond dispute, that, in case of emergency, any train can be stopped in a shorter distance with a considerable number of brakes than with a smaller number. It is equally certain that, if the speed of the train is controlled by brakes upon a few wheels, those wheels must be braked harder than would be the case if a larger number of wheels were braked. Those wheels are therefore more likely to slide flat and, especially upon long, heavy grades, their treads become much more heated. Heating the wheel treads is a great cause of cracked plates, and broken wheels cause wrecks. That a train may therefore be safely run at a higher speed with all the air-brakes in operation than it can be if a portion of the brakes are cut out, is a fact, the doubt of which implies ignorance on the part of the doubter. The air-brake was first used on freight trains in the far west, where heavy mountain grades are descended. The "straight air" brake was first used for this purpose, and, on account of the considerably lower cylinder pressures

where a large number of brakes were cut in, it was desirable to limit the number of "straight-air" brakes to be used. The introduction of the automatic air-brake changed the conditions, however, and it is a notable fact that on these heavy mountain grades it is the invariable custom to cut in all brakes and it is not regarded as safe to cut any out. Any impression that a train can be more easily or satisfactorily worked on a heavy grade, with only a small proportion of all the brakes cut in, is not only erroneous, but it is a fact, developed by experience, that it is not safe to attempt to handle trains in such a manner under such circumstances.

It is true that the combined leakages on a large number of air-braked cars will, in most cases, be found to be greater than on a smaller number. Where a reasonable degree of care is exercised in the inspection and maintenance of the air-brake, however, the aggregate leakage on a train of 40 freight cars is not sufficient to justify cutting out any of the brakes. The practice of cutting out a portion of the brakes, on account of excessive leakage in the train pipe and connections, is the surest encouragement of careless inspection and poor maintenance of the air-brake. The insistence by engineers and trainmen upon the use of all the air-brakes in the train, as an undisputed requirement of safe operation, would soon result in such an improvement in the condition of all air-brakes as would render it entirely practicable and in all ways desirable to utilize all the brakes in the train, no matter what the number.

It is said by our correspondent that "you cannot make as good a stop with 40 air cars as you can with 20, even with a 'reasonable amount of skill.'" This depends altogether upon whom he is addressing. If "you" refers to engineers who are anchored in old ruts and who have taken no pains to learn how to properly operate 40 air-brakes, the statement may have some force; but, when the operation of the air-brake upon long trains is well understood and properly carried out, this statement is misleading and untrue. Better stops and easier stops can be made with all the brakes in use, and the air pressure can be maintained for more efficient emergency service at all times. These erroneous ideas in regard to the practicability and desirability of using all the available air brakes in the train, have grown out of evil practices by engineers in handling the brakes of short trains, and from that sort of prejudice, often called conservatism, which made it so difficult for the injector to find a place upon the locomotive in place of the pump. In the case of the air-brake, however, it is a much more serious matter, because the safety of lives and property depends upon, *first*, having as many cars as possible equipped with the air-brake; *second*, keeping the brakes in such condition that they may all be used; and, *third*, using them.

The Proposed M. C. B. Coupler Tests.

Four sets of drop tests of M. C. B. couplers have been made with such care and publicity as to make the results authentic. The data from two of the tests have been given to the Western Railway Club and the results of the other two were presented to the Master Car Builders' Association. In the tests made at the Sargent Company's works, in Chicago, manufacturers were permitted to send special bars for the test, and the same was true of the two tests made at Altoona for the Master Car Builders' Association. The fourth test, made at the works of the Chicago Tire & Spring Company, was intended to be of couplers taken from lots sold to railroad companies and not yet put in use. So far as can be learned, these couplers were fairly selected. The results of the tests are given in the report of the proceedings of the Western Railway Club at its last meeting.

In the Sargent tests, as in all the others, the strongest bar was of cast steel, and it is practically true that some of the weakest were also of that material. The inferior brands of cast steel are even more brittle than ordinary cast iron. The brittleness comes very largely from bad annealing. Generally speaking the tougher and stronger the cast steel couplers are found to be, the more blow-holes they have, while the more brittle castings are more solid. This does not hold true in all cases, yet the strongest coupler so far has had a good many holes.

In all of the tests some of the malleable iron couplers have been found more brittle and weaker than good cast cylinder or wheel iron, and none of them have been as strong as the cast steel of the toughest quality; in most cases they have not been strong enough to meet the proposed standard tests. Mr. Waitt, in his paper before the Western Railway Club last month, held that malleable iron is more uniform than cast steel and less liable to defects from blow-

holes, but this has not been substantiated by the authentic tests so far made. The largest blow-holes and the most breakages due to defective castings, were found with the malleable iron. Of course, where couplers are prepared for the purpose of testing, better results may be expected, as each manufacturer tries to meet the test and this is indicated by a comparison of the last test with the three that preceded. If the last tests, made on couplers which were said to have been sold to railroad companies for use, are to be taken as a fair representation of the character of the brands of malleable iron and cast steel that are sold to railroad companies for couplers, then the logical conclusion is that the tests are too severe, or that all of the malleable iron, and most of the cast steel brands sold to-day, are too weak to use in couplers unless they are made thicker and heavier. Omitting one brand of cast steel from these last tests, the conclusion would be that none of the brands of material, whether cast steel or malleable iron, is strong enough to meet the proposed tests with the present weight per coupler.

There are too many links left out of the chain of facts to warrant a conclusion as to the severity of the proposed tests; but nevertheless, the tests have shown some important facts, not the least of which is that the guard arm is the weakest part of the vertical plane coupler, and further that couplers are sold to-day to railroads that are so weak as to be practically useless, and in some cases really dangerous. One railroad company sent a sample of some couplers recently purchased to determine whether the device was strong or weak and if they were being fairly treated by the manufacturer. The result was conclusive, as the coupler was spread around the testing plant in fragments at the first blow at ten feet. The material did not look like malleable iron, although it was claimed to be; it had the appearance of a low grade of cast iron. The guard arm dropped off with one blow at three feet and one blow at five feet broke the coupler in the jerk test. The other couplers tested ranged from a still lower strength to a quality that more than met the test; so it is pretty safe to say that in the market to-day there are all grades of couplers from worthless to good, and the problem which now confronts the railroad company is how to make a proper selection.

Questions of this kind have in the past been finally left with the Master Car Builders' Association to decide, and we find that the Association has laid down plans for the examination of air-brakes, brake-beams, wheels, axles, etc., which are now generally looked upon as a safe guide for a preliminary examination, leaving the results of service to give the final decision. Careful purchasers buy to-day none of these parts that will not meet the recommendations of the Association. Now the Association is proposing certain tests of couplers and these tests have, in four cases, shown that they are adequate to distinguish between the weak and the strong couplers, but they have not been in use long enough to show when a coupler is strong enough and need be no stronger. But the same may be said of all the other tests so far outlined by the Association. Perhaps all of them may be too severe, but in being so they err, if at all, on the right side.

The guard arm is the part of the coupler head which breaks most frequently in service. This might be the fault of design and material, or because this part of a coupler is especially exposed; the tests have shown this to be the weakest part of the coupler head. The knuckles, although they break frequently in service at the coupling-pin holes, do not generally break in the drop tests because the pin hole is not generally tested. It is generally understood and believed that the knuckle breakages at the pin hole are due to coupling with the link and pin coupler and that such breakages will be reduced greatly, if not removed entirely, when the link and pin couplers disappear. Outside of the link and pin breakages, the knuckle in service is seen to be one of the strongest parts of the vertical plane coupler, and this is due no doubt to the fact that it is made generally of wrought iron, wrought steel or cast steel, and is practically never made of any material more fragile than these. The knuckle has a simple form and can be easily cast in steel and perhaps this is the reason why most makers of malleable iron coupler heads used cast-steel knuckles.

It may be said that the proposed tests do not strain the coupler head in the same way that it is strained in service, as it is supported in service, when most severely struck, at the buffer-stop, which strikes against the end sill, while in the tests it is supported on the end of the shank. Should the tests be changed so as to include blows struck when the buffer-stop support is used, the shank support test should not be omitted, as it gives the best indication of the char-

acter of the material *per se* of any test that has been proposed so far.

In purchasing couplers the buyer cannot rely solely on the tests, or on guarantees, any more than in the purchase of air-brakes, brake-beams, axles, etc., but must look to the sum of all conditions, which include the reputation and experience of the manufacturer, the results of service on the home and foreign roads, the results of the preliminary tests, the accuracy of the parts as shown by the M. C. B. gages, and the general design and construction of the device. In this the proposed tests are but one of the important factors, and that they are important must be conceded by all who have a knowledge of the great practical utility of the tests which have been determined upon by the Master Car Builders' Association in the case of other details of car equipment.

It is gratifying to know that after some years of practical experience with the M. C. B. standard coupler, it has proved to be all that was claimed for it by the able committee appointed by the Master Car Builders' Association to select a suitable type, when they decided to recommend the Janney form of the vertical plane coupler. It stands to-day as the best coupler yet proposed, and in its present stage of development it costs for maintenance less than one-half of the cost of keeping up the link and pin coupler, after years of practical service have put it in its best form; so that now there is no uncertainty about the economy of using the M. C. B. standard coupler when made of reasonably good material.

The Bond Market for November.

The November market for railroad bonds, while not as strong as that of October, showed advances in all of the groups, except the coal roads. The course of the bond market differed from that of stocks. The latter after the week following Nov. 6, declined steadily and established values lower than those recorded since Jan. 2. The weakness in stocks is thought to be in a measure a reflection of disappointment over the failure of the election and of the Government bond issue at once to bring about better times. In fact speculators pinned altogether too much faith upon these factors, and a certain inflation was the consequence, and the reaction is but natural. On the other hand, there has been a steady demand for the better grades of bonds. As might be expected the Government loan of \$50,000,000, in the latter weeks of the month, checked the inquiry for the high class bonds, although it did not cause any material reaction in their prices. Another most noteworthy feature in connection with the market for the high priced issues was the failure of the Northwest and Burlington dividend reductions to create an effect. It indicates that in the view of holders, bonds are sufficiently removed from adverse circumstances to be a practical guarantee that neither their principal nor interest will be disturbed.

Specific causes have been operative in the market to a greater or less extent although in practically all of the groups they have counterbalanced one another. A table showing the movement in percentages by groups is given in the following:

Atchison 4s.....	\$3,347,000
Atchison 2nds.....	1,187,000
Chesapeake & Ohio gens 4 1/2s.....	407,000
Chicago & Northern Pacific 5s.....	324,000
Missouri, Kansas & Texas 4s.....	401,000
Missouri, Kansas & Texas 2nds.....	986,000
Missouri, Kansas & East 1st.....	447,000
Missouri, Kansas & Texas of Texas 5s.....	308,000
Northern Pacific Tr. notes.....	417,000
Northern Pacific Con. 5s.....	395,000
Oregon Short Line 6s.....	319,000
Oregon Improvement 5s.....	424,000
Philadelphia & Reading gen 4s.....	453,000
Philadelphia & Reading 1st incomes.....	351,000
Philadelphia & Reading 2d incomes.....	399,000
Philadelphia & Reading 3d incomes.....	407,000
Rio Grande Western 4s.....	547,000
St. Louis Southwestern 1st.....	311,000
St. Louis Southwestern 2d.....	388,000
San Antonio & Aransas Pass 4s.....	326,000
St. Louis and San Francisco 4s.....	373,000
Southern Railway 5s.....	1,471,000
Texas & Pacific 1sts.....	551,000
Texas & Pacific 2nds.....	1,537,000
Union Pacific, Denver & Gulf 1st.....	529,000
Wabash 1st.....	379,000
West Shore 4s.....	374,000

The receivership group, while making an advance of .78 per cent., has been more directly influenced by speculative conditions than any of the others. For several months many of the bonds of this class have been bought with the idea of making a "turn," and it is but natural that in a declining stock market, there should be a general taking of profits, but prices have stood up remarkably well under this realizing. The group is directly affected by the progress of the reorganization movement. The developments in this field in the month have been comparatively limited in number and importance. The most unfavorable was the Erie annual report, which indicates that the plan which was declared operative some time ago, must be remodeled in order to enable the company to meet its fixed charges in a bad year. The vim with which the Atchison Committee reorganized and set to work after Mr. Little's report foreshadows a new plan within a comparatively short time. The Reading plan has received the consent of the court and is in a fair way to be pushed toward completion. The Toledo, Ann Arbor & North Michigan reorganization has stood all sorts of onslaughts, and will probably become operative early in

the new year. These factors have served to strengthen the receivership bonds. Specific causes as well have been operative. Atchison 4's and 2's have enjoyed an unusually great activity. Some \$3,347,000 par value of the fours and a third of a million of the seconds, were dealt in. The net change was 2 and 3/4 points respectively. However, the decline in the former from the highest point of the month has been some 5 1/2 points. Extraordinary advances occurred in some of the St. Louis & San Francisco issues. The general sixes and consolidated fours were strong on the formation of the Protective Committee, through which it is proposed to secure to the owners their full rights in the Atchison reorganization.

An occurrence somewhat unusual was the strength in Northern Pacific. This was due to the substantial improvement made in the earnings of that company. Increased traffic returns are the only things which will save the system from dismemberment, and the various security holders fully recognize that fact. The Reading issues declined an average of 4 points. This is in the nature of a reaction from the somewhat high prices recorded when it became known that the reorganization plan would be a success. There was considerable speculation in the bonds, the sales amounting to over \$1,500,000. Oregon Short line sixes were one of the leaders in point of advance, gaining 5 1/2 points on an order of the court to pay past-due interest. The Toledo, Ann Arbor & North Michigan securities had their advance last month in discount of the reorganization plan which is regarded as decidedly favorable to the bonds. They remained practically stationary during November.

The Grangers, with an average advance of over 1 1/4 points, reflect a steady investment demand on transactions that were rather more numerous than usual. This can be said of the Coal and Trunk Line groups. The continued advance served to place these bonds farther and farther away from the reach of capital as the yield is too small to invite investment. It is a noteworthy fact that despite the reduction in the dividends of the Burlington and the Northwestern, the various issues of those two companies, without an exception, advanced. The 7 per cent. registered bonds of the latter company appreciated 4 1/2 per cent.

There was less activity in the Trunk Line group. This perhaps explains the somewhat lower average change. The Trunk Line roads all report an exceedingly limited volume of eastbound business, but say that the westbound traffic is good and serves to bring up the average. Hardly a bond of the Granger and Trunk Line group declined.

The Southwestern issues, next to those of the receiverships, were affected by speculation. The movement was irregular. Sharp gains were scored in the majority of the issues. This is in part the reflection of the better feeling as a result of the election in which the Populist party in many sections was overthrown. It was notable that heavy transactions were also recorded. Texas Pacific firsts and seconds sold to the extent of over \$2,000,000, par value. The seconds were weaker during the latter part of the month, on knowledge that a claim of \$225,000 held by Southern Pacific, and which had been standing against the company for a long time, was settled. This must come out of earnings. The issue had been largely bought on the one idea that some day it would yield its interest. This settlement tends to make payments the more remote. Wabash seconds were in good demand, neither that issue nor the firsts changed more than a fraction.

The Transcontinental group led in point of average advance. Election influences were largely responsible. They were particularly felt in Rio Grande Western, and Denver & Rio Grande bonds.

The coal group was the only one which declined. This was due to the semi-demoralized condition of the coal trade, which ruled during November, and which had only recently been patched up. The movements were moderate, being chiefly in the issues of Jersey Central. The fact as displayed by the statement of that company, that it is not earning its interest was perhaps as potent, as coal trade conditions, in influencing the decline.

The Southern group, with the exception of Chesapeake & Ohio 4 1/2's advanced. The decline of 3/4 point in the issue named was in the nature of a reaction from the appreciation of some 4 points in October. Southern Railway fives have been one of the features of bond speculation during the month, \$1,471,000 par value being traded in. About the middle of November they were weak, in sympathy with the stock, and the latter advanced to approximately the highest figures, on the announcement that large blocks had been sold in London, and that shortly they would be listed on the London Stock Exchange.

The miscellaneous group was about stationary in average movement, although it fluctuated heavily. Brooklyn Elevated firsts and seconds declined 4 and 2 points respectively as a result of the month's transactions. This, taken in conjunction with a decline of 9 1/2 and 8 points the previous months, represents severe losses. Union Elevated firsts advanced one point as against a decline last month of 7 1/2. A loss of 10 points in Oregon Improvement fives on total transaction of \$425,000 par value, was due to exceedingly bad earnings. The course of United States Cordage firsts has been steadily downward, the net loss for the month being 65 1/2, and for two months something over 12. There was steady liquidation of the bonds, and there appeared to be little or no support. The decline was accompanied by rumors that interest due January 1st would not be paid. Semi-official statements that the interest would be met when due strengthened the

issues toward the last. The heavy declines noted served to bring down the average of the group, otherwise it would have compared favorably with the others.

Following is given a table showing the amounts and par values of the issues which led in point of activity:

The advance by groups and the average is shown in the table herewith:

Receivership group advanced.....	0.78
Granger group advanced.....	1.26
Trunk Lines group advanced.....	.62
Southwestern group advanced.....	1.34
Transcontinental group advanced.....	1.85
Coal group declined.....	.28
Southern group advanced.....	.59
Miscellaneous group advanced.....	.04

Combined list advanced.....

.77

The usual detailed table of changes in prices for two months will be published next week.

Annual Reports.

New York, Lake Erie & Western.—The annual report of the Erie for the year ending Sept. 30, 1894, was published last week. It covers operation on 1,970 miles, of which 610 are double track. This includes the main line and its branches, 551 miles; leased lines, 551; New York, Pennsylvania & Ohio, 430; leased lines, 169; Chicago & Erie, 250, and trackage rights over the Chicago & Western Indiana, 20.

The chief results of operation are as below:

	1894.	1893.	Decrease per cent.
Gross earnings, including leased lines and branches.....	\$25,204,429	\$29,993,160	16.0
Percentages to leased lines.....	2,274,869	2,652,534	14.3
Working expenses.....	17,911,309	20,147,778	11.1
Net earnings.....	5,008,251	7,192,848	31.2
Income from other sources.....	1,063,758	1,043,909	....
Interest, rentals, etc.....	7,239,416	7,319,319	....
	\$1,167,407 (Deficit)	\$917,438 (Surplus)	

For gross earnings so small we must go back to 1886 when the gross amounted to \$24,756,067. These increased year by year until 1892, when they had risen to \$31,262,000. The net earnings have not been so small since 1885, when they were \$4,587,056. The year of largest net earnings was 1891, when they amounted to \$7,259,698. In each year since 1885, until this year, there has been a surplus.

The decrease in gross earnings was due not only to loss of traffic, but to lower rates per traffic unit, both in freight and passengers. And just here comes in a point which may easily be overlooked. What the Frenchmen call the coefficient of operation (the percentage of the gross earnings used up in operating) is larger this year, just when it was hoped that it would be smaller. On the Erie system (excluding the N. Y., P. & O.) this coefficient was 68.35 against 65.57 the year before and 66.73 two years before. But on the business done, if the rates of last year had been maintained, the coefficient would have been 64.78. On the N. Y., P. & O., it would still have been larger than the year before even at the same rates, but would have been 74.53, instead of 79.92. That is to say that the system has been worked with great economy, and the great loss in net is due to circumstances quite beyond the control of the officers of the road. Still another important fact enters. Under the receivership no charges can be made to construction account but more or less construction must go on. Sidings and other facilities must be increased even in a poor year and such expenditures must be charged to operating expenses.

On the Erie proper the general freight earnings as compared with 1894 declined 13.83 per cent., the passenger earnings 12.37, the coal earnings 19.35 and the total 14.79. The net from operation declined 21.76 per cent., and after deducting the percentages applicable to leased lines the net declined 22.65 per cent. These figures should be compared with those drawn from the working of the New York, Pennsylvania & Ohio, which appears to be a heavy charge on the system. On that part of the line the general freight earnings fell off 18.3, the coal earnings 28.94; passenger, 17.35, and total earnings, 19.58 per cent. It will be seen that each item decreased more than on the Erie proper. The net earnings from working declined 42.15 per cent. as compared with a decline of 21.76 on the Erie proper.

The accountants show a profit from the New York, Pennsylvania & Ohio in 1890, and a loss in each year since then, amounting this year to \$707,399. The total loss on that system from the beginning of the lease, May 1, 1883, is figured out as \$2,114,925. Whether or not this is exactly a fair way of presenting the results of this lease one cannot judge without a good deal more information than the report gives. But the earnings of the main line could not be kept up to where they are without the through connection to Chicago and without the traffic originating on the New York, Pennsylvania & Ohio or destined to points on that line. The case is something like that of the Atchison and its auxiliary lines, and indeed it is by no means a novel one in railroad organizations, but rather a rule than otherwise. While there is an apparent loss on the lines of thin traffic the business furnished by those lines is necessary to profitable working of the main stem.

The operations of the Chicago & Erie also show a deficit. The gross earnings were nearly \$3,000,000. The interest on funded debt, rentals, etc., amounted to \$839,000, leaving a deficit of \$376,000. The Union Steamboat Co., with gross earnings of \$352,000 shows also a deficit, the amount being \$184,834, and this company has a floating debt of \$850,000.

The deficit of \$1,167,407 does not include these losses on the Chicago & Erie and on the Union Steamboat Co.,

but does include that on the New York, Pennsylvania & Ohio. The upshot is that the interest in default is \$2,165,844.

The net amount of current liabilities is nearly \$10,000,000, having increased almost \$4,000,000 over the preceding year. This includes the bond interest in default.

We have shown the percentages of change in various items of revenue on the Erie proper and on the New York, Pennsylvania & Ohio. A few further facts will be of interest. The ton-miles of coal fell off on the main line 9.31 per cent. and on the New York, Pennsylvania & Ohio 21.18 per cent. As the coal traffic is a very important part of the business of both these systems this figure becomes significant. The earnings from coal per ton per mile amounted on the main line to 0.558 cent and on the New York, Pennsylvania & Ohio, 0.492 cent. In both cases there was a decrease in the rate, but on the main line it was much the heaviest, owing doubtless to the influence here of the heavy tide water business, which has been demoralized. The general freight ton-mileage fell off on the main line 11.7 per cent. and on the New York, Pennsylvania & Ohio, 10.33. The earnings per ton per mile were on the main line 0.671 and on the New York, Pennsylvania & Ohio 0.531. In each case the rate declined considerably, but most on the New York, Pennsylvania & Ohio. The average freight train load was 261 tons, an increase of 5½ per cent. on the main stem. On the New York, Pennsylvania & Ohio it remains at 189 tons. The passenger miles fell off 10.16 per cent. on the main line and the earnings per mile were 1.472 cents, a decrease of 2.45 per cent. On the New York, Pennsylvania & Ohio the passenger miles fell off 11.8 per cent.; the rate was 1.646 per cent., a decrease of 7 per cent.

Of course we are now dealing with an exceptionally bad year; but after all it only makes obvious two facts that have been pretty apparent for a good while: that the Erie is carrying an interest account too big for its earning capacity, and that the New York, Pennsylvania & Ohio lease is too burdensome in its terms. As we have said before if the reorganization does not take account of these facts another reorganization will have to be made before many years.

Of the sudden writing off of about \$4,200,000 to profit and loss, which has been spoken of as mysterious, about all that need be said is that it ought to have been done before. Over \$900,000 of this was for third rail, none of which has been in the track for six or eight years. Other items were accounts going back more than 30 years. It seems unfortunate that such dubious assets should have been carried till this year of all others; but now that the knife is fairly in cutting is easier.

Richmond, Fredericksburg & Potomac.—The report of this company is for the fiscal year ending June 30, 1894. The gross earnings were \$674,347, and the operating expenses \$443,156. After deducting fixed charges, rentals, etc., there was left a surplus of \$146,019 from which dividends were paid to the amount of \$145,470. The dividend for the fiscal year was 6½ per cent., but it is expected that with the return of a moderate prosperity dividends may be restored to 7 per cent., as heretofore. The loss in passenger travel was 15.9 per cent. in volume and 14 per cent. in revenue. In freight the loss was 12.9 per cent. in volume and 14.6 in revenue. The ratio of expenses to receipts was 65.8. The average passenger mile rate was a little higher than last year, namely, 2.404 cents. The ton mile rate, however, was still further reduced to 1.006, this being the lowest rate ever reached on this road.

The Stock Yards Terminal Charge at Chicago.

An important decision was rendered in the United States Circuit Court at Chicago last week, briefly referred to in our traffic columns Nov. 30. The decision was by Judge Grosscup and was the outcome of a suit brought by W. K. Keenan, a live stock merchant, against the Receivers of the Atchison, Topeka & Santa Fe to compel them to deliver four cars of live stock shipped from Kansas City, consigned to the Union Stock Yards, Chicago, without the payment of an additional trackage charge of \$2 per car for delivery at the Yards. The suit was brought as a test case and against the Receivers of the Atchison, for the purpose of obtaining an early decision in the United States Court.

The case grew out of the action of the Stock Yards Co. some six months ago in imposing a trackage charge on all business to cover switching to and from the yards, for the purpose of augmenting its revenues. The roads were inclined at first to absorb this charge, but finally decided that in view of the extremely low rates on live stock and packing house products that they could not afford to do so, and thereupon fixed upon a uniform charge of \$2 a car, to be added to the billing, as terminal charges. The shippers have been fighting this charge ever since on the ground that it causes a discrimination against the Chicago merchants, no similar charge being made at Omaha and Kansas City.

Judge Grosscup's decision in brief is as follows: The specific question is this: Is the railroad company, on its freight rate of 23½ cents per 100 lbs., required to transport the live stock delivered to it at Kansas City to the stock yards without further charge? The question is not one of contract between the petitioners and railroad company, but is a question of right between it and the public. Stability of business conditions and fairness in business competition require that each man's expenses at the hands of the carrier shall be the same as that accorded to all others, no more, no less, and the law will not permit that such equality should ever be disregarded by the

carrier or voluntarily waived by the shipper. The duty of the carrier is to furnish facilities for loading, carrying and unloading. Its custody of the stock remains and its obligation is not discharged until the shipper is furnished with proper facilities to unload. The carriage includes the delivery and there can be no delivery except at such a place as is suitable to the delivery of the particular thing carried. I am impressed with the belief that the practice of the defendant has made the stock yards its depot for the delivery of live stock.

The road has lost its case because it has no suitable station of its own at which to deliver live stock. It is true that such a station would not be used if it existed, but to justify the extra charge without it, it would be necessary to hand the cars over to another carrier at the point where they leave the Atchison tracks. In taking the cars to the stock yards itself the Atchison was giving the shipper too much and now suffers for it. But long established custom and the strong competition will no doubt cause the present practice to be continued, and so we see one more instance of the constant downward pressure upon rates.

The Atchison has complied with the order of the Court and has cancelled the \$2 switching charge on live stock. The other roads have agreed to pay no attention to the action of the Atchison, pending a meeting of all the interested lines to be held soon, at which it is probable that the live stock rates will be advanced sufficiently to cover the \$2 charge. This seems to be the only way to meet the situation without serious loss, and it is to be hoped it will be quickly agreed upon. While the other roads are not affected directly by the decision they cannot afford to let the Atchison take all the business, which the shippers would turn that way if the other roads kept up their charge.

Central Traffic and Trunk Line officials are sanguine that the new agreement for the discontinuance of all commissions on eastbound passenger business, which we briefly referred to last week, and which becomes operative on January 1st, will effectually cure the present and long existing demoralization in their territory arising from these payments. The trouble heretofore has been that neither the Canadian lines nor the principal New England lines would join in any agreement for the abolishing of commissions eastbound. It is believed that there is now no demoralization on westbound business so that no action is necessary as regards that. The status of the Canadian lines in the new agreement is this: The Canadian Pacific and the Grand Trunk agree to pay no commissions on business from Chicago or originating in Central Traffic or Trunk Line Association territory, eastbound, but they will continue to pay the agreed commissions on business originating in the Pacific Coast up to the western gateways of the Central Traffic Association, in common with the Western trans-continental lines. This is satisfactory to the Eastern lines, when coupled with the agreement of the Central Vermont, the Maine Central, the Fitchburg and other New England roads not to pay any commissions from the prohibited territory. There is apparently no reason whatever why the parties to this agreement should not maintain it in the spirit of good faith which its signing would indicate. The Canadian Pacific has steadily declined to enter any agreement of this kind until it was satisfied that its competitors were acting in good faith. Its signature at this time, therefore, places upon it the burden of proof hereafter if it seeks to withdraw from the agreement. In case the agreement follows the way of its numerous predecessors it is to be hoped that the Canadian Pacific will be able to so conclusively demonstrate that it was not responsible for its failure as to set at rest any charges that have heretofore been made of lack of good faith on its part in dealing with the American lines.

A Boston paper prints a letter from "Old Subscriber," or some one else of that class, stating that he cannot read the valuable utterances of the editor of that paper, because the cars of the Old Colony system of the New York, New Haven & Hartford, in which he rides home at night, are poorly lighted. In the forward car the other night there were eight lamps, of which only three were burning. On going into the next car there were only six lamps, altogether, and four of these were not burning; and the writer intimates that the lamps are not kept in repair. We are sorry for this commuter and we hope he will complain to the superintendent of the road, for he deserves good light even if he reads some other newspaper, or prefers a novel. His grievance is so real that it certainly will be noticed. But more of our sympathy goes out for the passenger whose light is almost good enough, but not quite so. His difficulty is so small that the railroad manager who believes himself too busy to attend to such details can by a little effort convince himself that it is all imaginary and so shut his eyes to it. We could tell of suburban passengers, not over 234 miles from Boston, who have good Pintsch gas and a sufficient number of lamps lit, but who have to strain their eyes to read because the gas is never turned on at sufficient pressure. On the same road there are cars which are lighted with oil—owing, we suppose, to the hard times—in which the lamps are well cared for, but the light is insufficient because there are not enough of them. If the upper interior of the cars were painted a light cream color, these lamps would be sufficient, but the master car builder evidently has forgotten what he read on this subject in the *Railroad Gazette* of May 11, last.

A press despatch from Montreal states that the Canadian Pacific has recently added 300 men to its force in the car shops near that city; not because business necessitates work now, but because 600 cars which need repairing can better be attended to now than in summer when business is more active. Perhaps we may assume, too, that the officers of the company are mindful of the fact that the weather is getting cold and that coal and clothes must be bought, and that more and better food is needed now than in the summer, and that there are fewer outside jobs floating around. Notwithstanding Debs and the wonderful strike commission, considerations of this sort do often enter in deciding whether or not shops shall be run, or whether or not hours shall be cut down. Probably there are few railroad officers who have had experience and intelligence enough to reach high positions, who do not fully understand the fact that it is a great deal better to attach their shop men and all other employees to the road by helping them out in hard times, than to treat them as so much transient material to be hired when there is work to be done and cut off when work slackens, regardless of the interests of the men and their families.

An unusual way of getting rid of the danger of train robbers has been adopted on the Kansas & Arkansas Valley Division of the Missouri Pacific Railroad. After Dec. 9, no passenger trains will be run at night between Coffeyville, Kan., and Van Buren, Ark. This puts the burden upon the shoulders that ought to carry it; that is, if the people of that country want railroad service they must themselves protect the railroads, which, as we have said over and over again, is after all the only civilized solution of this particular part of the "railroad problem."

NEW PUBLICATIONS.

The Construction of the Modern Locomotive.—By George Hughes, Assistant in the Chief Mechanical Engineer's Department, Lancashire & Yorkshire Railway. London: E. & F. N. Spon; New York: Spon & Chamberlain, 1894. Octavo, 261 pages with index and many illustrations. Price \$3.50.

In this book Mr. Hughes has collected the papers which have appeared from time to time in the pages of *The Engineer* (London), where a good many of our readers must have seen them. His scheme has been to give a detailed description of shop practice and not to touch design; and he has succeeded in making an excellent treatise from the English point of view. The book is admirably illustrated and physically sound, with good paper, good type and well bound, being an agreeable specimen of honest English book-making. The subject is divided into sections, treating of the boiler, the foundry, forgings, coppersmith's work, the machine shop and erecting. Under forgings, in subordinate chapters, the author treats of the iron foundry, the use of steel castings and the brass foundry. It is hardly necessary to go into particulars as to the differences between American and English practice, but the man who wants to know what current English practice is, down to pretty small details, can find it in this book.

Master Car and Locomotive Painters' Association; Proceedings of the 25th Annual Convention

This book, substantially bound in cloth, has just been issued by the *Railroad Car Journal* of New York, which publishes it for the Association. The meeting was quite fully reported in the *Railroad Gazette* of Sept. 21, but the official volume gives numerous details which we did not have space for. It contains full-page half-tone portraits of the President, the First and Second Vice-Presidents and the Secretary of the Association.

The Catechism of Car Painting, prepared by Mr. F. S. Ball, which formed the subject of a paper at this convention, is issued in pamphlet form by itself.

Poor's Directory of Railway Officials and Manual of American Street Railways. November, 1894. New York: H. V. & H. W. Poor.

This is the ninth annual number of this publication. It is an octavo volume of about 400 pages and gives classified lists of railroad officers; being first, each railroad company in its alphabetical order, then lists of chief engineers, master mechanics, purchasing agents, master car builders, master car painters, general managers and superintendents. Other lists give the tramways of the United States and Canada and railroads of Mexico, Central and South America. There is an alphabetical list of all the names of railroad officers with references to the pages on which their titles and roads can be found; also a list of officers arranged geographically under States and cities. Further there is a buyer's guide to manufacturers and dealers in all articles used by railroads.

TRADE CATALOGUES.

A List of Photographs of Locomotives has been issued in pamphlet form by Mr. F. Moore, of 9 South place, Finsbury, London, England, a photographer who has gathered a great variety of these pictures. His title page says "all railways and all countries." He has photographs of from four to a dozen engines of each of the prominent English roads and the catalogue also describes pictures of engines of French, Italian, Belgian and Russian roads. The price of small photographs is 4d each; those 8 in. x 6 in. are one shilling. Lantern slides will be furnished of any engine.

LOCOMOTIVE BUILDING.

The South Baltimore Car Works will rebuild 800 freight cars for the Baltimore & Ohio.

The Schenectady Locomotive Works have received an order from the Pittsburgh for five mogul engines.

An air-brake instruction car has been turned out of the Baltimore & Ohio shops at Mount Clare.

The order of the New York, New Haven & Hartford Railroad, which was reported in these columns a few weeks ago as likely to go to the Rhode Island Locomotive Works, has been awarded to that company. The order is for 25 engines.

These are all consolidation engines, the first of which is to be delivered in ten weeks. These engines will have four pairs of driving wheels, 51 in. in diameter. The cylinders will be 20x26 in. The locomotives will weigh 150,000 lbs., 138,000 lbs. on the drivers. The boilers are to be 72 in. in diameter. They will be built upon drawings furnished by the railroad company, and made under the direction of John Henney, Superintendent of Motive Power.

The contract for locomotives recently let by the Southern Pacific is for 40 locomotives, 20 to the Cooke Locomotive Works and 20 to the Schenectady Locomotive Works. The locomotives ordered from the Cooke Locomotive Works will be 19x26 10-wheel passenger locomotives. Those ordered from the Schenectady Locomotive Works will include six 8-wheel passenger engines with 19x24 in. cylinders; 11 12-wheel passenger, 20x26 in. cylinders, and three 19x26 10-wheel freight with 19x26 in. cylinders.

CAR BUILDING.

The Southern Pacific is receiving bids on from 1,000 to 1,500 freight cars.

The Buffalo, Rochester & Pittsburgh is receiving bid for building about 250 box cars. The award is not expected to be made for a few weeks.

The Kansas City, Ft. Scott & Memphis Railroad has contracted with the Memphis Car & Foundry Co., Memphis, Tenn., for the rebuilding of a number of cars.

The Mt. Vernon Car Co., of Mt. Vernon, Ill., has received the contract from the South Carolina & Georgia Railroad for building 250 fruit cars for that road. The Mt. Vernon shops are now working on total contracts for something over 500 cars.

Mr. D. H. Gilman, of Seattle, who has been interested for some time in the project for erecting a blast furnace and car shops in Seattle, Wash., has recently written to his associates at Seattle that he has been able to complete satisfactory negotiations to carry out the plans.

The Union Car Co., of Depew, N. Y., has an order for 30 flat cars for the Toronto, Hamilton & Buffalo in Ontario, 20 platform cars and a snow plow for the Buffalo & Susquehanna, a snow plow for the Buffalo, Bellevue & Lancaster Road. The company is also rebuilding a number of cars for the Arms Palace Horse Car Co., Lackawanna Live Stock Co., and the Merchants' Dispatch Transportation Co.

PERSONAL.

—Mr. J. H. Kain, formerly Chief Engineer of the Mexican Central, has been appointed Chief Engineer of the Mexican Inter-oceanic road.

—Mr. A. H. Woods, who was formerly connected with the Mexican Central, has been appointed General Superintendent of the Mexican Inter-oceanic.

—Charles H. Ellis, a well-known civil engineer, died at his residence in Detroit, Mich., last week of apoplexy. Mr. Ellis was born in Woonsocket, R. I., in 1841, and commenced his career as civil engineer on the Fitchburg road.

—Mr. C. H. Quereau, who has been Engineer of Tests of the Chicago, Burlington & Quincy at Aurora, has been appointed Assistant Superintendent of Motive Power of that road. His office will be at Plattsmouth, Neb. Mr. Quereau entered upon his new duties on Dec. 1.

—Mr. Frank M. Baker, the General Superintendent of the Addison & Pennsylvania Railroad, has been appointed General Manager of the Darien & Western Railroad in Georgia. This railroad is controlled by Northern people and Mr. Baker has been given charge of the construction of the railroad and expects to have the work completed within a few months.

—Mr. George D. Dixon, Chief Rate Clerk in the freight department of the Pennsylvania Railroad, has been appointed Division Freight Agent of the Northern Central, Baltimore & Potomac and Washington Southern branches of the Pennsylvania. Mr. Dixon succeeds Mr. John B. Thayer, Jr., recently appointed Assistant General Freight Agent of the Pennsylvania Railroad.

—The Union Pacific receivers, Messrs. Clark, Anderson, Coudert, Dane and Mink, have been allowed a salary of \$12,000 a year by Judge Sanborn, of the United States Circuit Court at Omaha, but in his order Judge Sanborn leaves the matter open for further adjudication. It will be remembered that some months ago the five receivers of the Union Pacific applied to the court for an allowance of \$18,000 per year compensation for each receiver.

—Mr. R. E. Eavenson has been appointed General Manager of the Williamsport & North Branch Railroad, in Pennsylvania. Mr. Eavenson has been Assistant General Manager of this railroad since last October. He was previously Division Superintendent on the New York & New England Railroad. He now succeeds Mr. Benjamin G. Welch as General Manager. The latter has held that office since 1882. He was for several years President of the railroad.

—Mr. W. H. Fenner, Jr., has been elected President of the National Car Wheel Co., at Buffalo, and W. W. Turlay, who has acted as manager of the company since its organization, two years ago, has been elected Vice-President and Treasurer. Mr. Fenner is well known in the railroad world as formerly President of the Allen Paper Car Wheel Co., and later of the Grant Locomotive Works, of Chicago. He was also formerly connected with the Rhode Locomotive Works.

—Mr. George W. Booth, Auditor of the revenue of the Baltimore & Ohio, has been promoted to be General Auditor of the company, to succeed the late W. T. Thelin. Mr. Booth has been in the employ of the company since the close of the Civil War. He was for a time a receiving freight clerk at Camden Station, and has worked himself through various departments to his present position. Mr. J. T. Watkins, Auditor of the Merchants' & Miners' Transportation Co., has been made Auditor of Revenue, to succeed Mr. Booth. Mr. Watkins was formerly Chief Clerk in the office.

—Mr. William Smith, Superintendent of Motive Power

of the Chicago & Northwestern, has resigned. Mr. Robert Quayle, Master Mechanic of the Northern Division of the same road, has been appointed his successor. Mr. Smith has been in the service of the Chicago & Northwestern for the past 21 years. Mr. Quayle the new Superintendent of Motive Power has been practically with the same company for the past 23 years, began railroad life on the Chicago & Northwestern, but in 1885 went to the Milwaukee, Lake Shore & Western, and remained with that company until it was leased to the Chicago & Western.

—Major John C. Winder, who was last week succeeded as Vice-President of the Seaboard Air Line by Mr. E. St. John, late of the Chicago, Rock Island & Pacific Railroad, had been connected with the Raleigh & Gaston and Raleigh & Augusta railroads (now divisions of the Seaboard Air Line) for 25 years. For a number of years he was General Superintendent and later General Manager, prior to his election as Vice-President. The announcement of his resignation last week was a great surprise. His son, John H. Winder, who is now the General Superintendent of the road, with headquarters at Atlanta, Ga., says that his father resigned because he desired to retire from active railroad life, and that the position he held was not agreeable to him as it kept him separated from his family most of the time; that Major Winder tendered his resignation last August, but it was not accepted, and that lately he had insisted on its acceptance. The salary of the office is said to be \$10,000.

—The election of Mr. E. B. Thomas to the Presidency of the New York, Lake Erie & Western Railroad ought to please the security owners and the friends of that road. The financial conduct of the affairs of the system under Mr. King has been very able, but the administrative work of Mr. Thomas has been one of the most important elements in the improvement of the affairs of the system. To his knowledge, fidelity and devotion are very greatly due the improved physical condition of the road and the great improvement in the efficiency of the staff which has taken place under his administration. Mr. Thomas came to the Erie in February, 1888, as Second Vice-President, in charge of the lines west of Salamanca, and in October of the same year he was transferred to New York in charge of the Operating Department of the whole system. In November, 1890, he was made First Vice-President, which position he has held until now. Mr. Thomas began his active railroad career in 1870 as Receiver of the Lake Shore & Tuscarawas Railroad, now the Cleveland, Lorain & Wheeling.

—Ex-Governor Oden Bowie, long a prominent figure in Maryland politics and mercantile history, died at his country home at Bowie, Md., on Dec. 5. Governor Bowie was a descendant of an old Maryland family. He served in the Mexican war, and in later life held many political positions, and in 1867 was elected Governor of the State. During his administration many important questions were settled, including the collection of tax arrears from the Baltimore & Ohio Railroad, re-payment by the United States of money loaned to the Federal Government for war purposes, and the conversion of the Chesapeake & Ohio Canal into a paying enterprise. He was largely interested in railroad properties and became President of the Baltimore & Potomac Railroad in 1860. The construction of that line was interrupted by the war, but it was finally completed under Mr. Bowie's management. The Pope's Creek branch of the Pennsylvania and that company's line into Washington is largely credited to Mr. Bowie's advocacy. In 1873 he became President of the Baltimore City Passenger Railroad, and in the management of that enterprise was very successful.

—Mr. E. St. John, General Manager of the Chicago, Rock Island & Pacific has resigned to accept the position of Vice-President of the Seaboard Air Line, with headquarters at Norfolk, Va., and will enter upon the duties of his new position on Jan. 1. Probably no railroad official is more widely known than Mr. St. John. His striking autograph became permanently associated with "The Great Rock Island Route" during the 16 years that he was its General Ticket Agent, and it is safe to say that the present popularity of that line is due in no small degree to the progressive methods adopted by him. Mr. St. John was born in Connecticut, Feb. 4, 1844. He commenced work for the Rock Island, July 4, 1863, as clerk in the passenger department, and was made General Ticket Agent in September, 1869. Subsequently he was General Passenger and Ticket Agent and Assistant General Manager, and was appointed General Manager of the Rock Island in September, 1887, since which time he has been identified closely with the policy of the line. Mr. St. John has also done much for the railroads of Chicago and the West by his active and tireless devotion to the General Managers' Association of Chicago. He took hold of this association in 1892, when it was practically dead, infused new life into it, and has been its chief executive officer by successive re-elections since then, serving as Chairman of the Executive Committee. He was largely instrumental in the formation of the Western Railway Weighing Association, one of the first associations of the kind in the United States, also the Chicago Car Service Association, and has always been a working member of the various western traffic associations. His efforts in connection with the transportation department of the World's Fair had much to do with the success of that department of the Exposition.

ELECTIONS AND APPOINTMENTS.

Baltimore, Chesapeake & Atlantic.—President John E. Seales, of New York, has issued an order announcing the organization of the company which was the purchaser at recent sales of the Baltimore & Eastern Shore Railroad and of the Maryland Steamboat Co., the Eastern Shore Steamboat Co., and the Choptank Steamboat Co., of Baltimore. The following officers will operate the properties. Nicholas P. Bond, Vice-President and General Counsel, Equitable Building, Baltimore; Winthrop M. Tuttle, Secretary and Treasurer, 22 William street, New York; Willard Thomson, General Manager; B. L. Fleming, General Freight and Passenger Agent; and Andrew Hunter, Jr., General Auditor, 241 South street, Baltimore; A. J. Benjamin, Superintendent railroad division, Salisbury, Md.

Colorado, Wyoming & Great Northern.—The following gives the addresses of the incorporators of this company in Colorado: W. T. Carpenter, T. E. Sanford, C. F. Lass, M. O. Whitehead, J. P. Nesbitt, all of Grand Junction, Col., where the principal office will be.

Denver, Leadville & Golden.—The Directors have elected these officers: Samuel Newhouse, President; C. C. Welch, Vice-President; James B. Miller, Secretary; W. A. H. Loveland, Treasurer and General Manager. John B. McCormac, formerly Superintendent of the Union Pacific, Denver & Gulf Railroad, was appointed General Superintendent, in place of C. E. Mitten.

Dry Fork.—James Hamill, of Kearneyville, W. Va., has been appointed Auditor of the Dry Fork Railroad, with headquarters at Hendricks, W. Va.

Gulf, Colorado & Santa Fe.—At a meeting of the Directors of the company last week, Aldace F. Walker, one of the Receivers of the Atchison, Topeka & Santa Fe, was elected President, vice J. W. Reinhart, resigned, and Edward King, of New York, was made Manager of the Board of Directors.

Lehigh & Hudson River.—At the annual meeting of the stockholders in New York City this week, Directors were elected as follows: Grinnell Burt, J. S. Harris, Edward D. Adams, George F. Baker, Henry Graves, G. A. Hobart, John S. Martin, J. Rogers Maxwell, George W. Sanford, W. R. Potts, Charles Caldwell, and R. T. Davies. The new Board re-elected Grinnell Burt President and General Manager, Joseph S. Harris, Vice-President, Daniel B. Halstead, Secretary, John Saylor, Treasurer, and W. E. Bailey Superintendent.

Mexican Central.—W. D. Murdock, who was formerly with the Atchison, Topeka & Santa Fe, has been appointed Assistant General Passenger Agent of the Mexican Central, with headquarters in the City of Mexico.

Mexican, Cuernavaca & Pacific.—The appointment is announced of W. J. Parker as General Passenger Agent of this road. Mr. Parker was formerly agent of the Mexican Central in San Francisco.

New York, New Haven & Hartford.—C. C. Burnett has been appointed Assistant Superintendent of the Worcester Division of the Old Colony lines, with headquarters at Southboro, Mass.

New York, Lake Erie & Western.—The old Board of Directors was re-elected without opposition at the annual meeting of the Railroad company in New York City, last week. Mr. J. G. McCullough cast the vote of 38,659,700 shares of stock, and Mr. C. H. Coster, of Drexel, Morgan & Co., cast the vote of \$32,418,900 bonds. Director William A. Wheelock was Chairman of the meeting. The Directors are John King, John G. McCullough, Ogden Mills, J. Lowber Welsh, Abram S. Hewitt, William Whitewright, William A. Wheelock, Alexander E. Orr, Henry H. Cook, Morris K. Jesup, George W. Quintard, William Libbey, Cortlandt Parker, James J. Goodwin, William L. Strong, William N. Gilchrist and E. B. Thomas.

At a meeting of the newly elected Board of Directors, Mr. John King declined to be a candidate for re-election to the Presidency, which position he has long filled. Mr. E. B. Thomas, the First Vice-President, was elected to the office. The offices First and Second Vice-President were not filled.

New York & Sea Beach.—The annual meeting of the road was held last week and these Directors were re-elected: William O. Platt, George Peabody Wetmore, Thomas T. Nelson, A. H. Mann, Charles C. Protheroe, Levi C. Lathrop and John Barker.

Pennsylvania.—R. L. O'Donnell, Assistant Engineer of the Tyrone Division, will succeed Victor Wierman as Assistant Engineer of the Pittsburgh Division and C. P. McArthur, Supervisor of the division extending from Harrisburg to Lancaster, has been promoted to Mr. O'Donnell's position.

Toronto, Hamilton & Buffalo.—The company has been reorganized with S. E. Peabody, of Boston, as President. The construction of the road is proceeding west of Hamilton, Ont.

Ulster & Delaware.—At the annual meeting of the stockholders, held at Kingston, N. Y., on Dec. 4, Horace G. Young, Robert C. Pruyn, Joel W. Burdick, Alfred Van Santwood, C. C. Clark, J. D. Laying, William A. Reade, H. C. Soop, Jacob H. Tremper, A. S. Staples, Hewitt Boice, David Winne, and Charles Bray were elected Directors. The Directors elected the following officers: President, Horace G. Young; Vice-President, Robert C. Pruyn; Treasurer, Thomas C. Hoonbeck; Secretary, H. C. Soop.

RAILROAD CONSTRUCTION.
Incorporations, Surveys, etc.

Albany, N. Y.—Col. George L. Gillespie, representing the Secretary of War, gave a hearing at Troy last week to persons interested in the proposed bridge across the Hudson River from Ferry street, Albany, to Tracy street, Bath-on-the-Hudson. Citizens of Troy, and others representing the boating interests, maintained that the proposed bridge was not needed, and would impede navigation. Ex-State Engineer Martin Schenck and others spoke in favor of the bridge.

Baltimore, Md.—Bridge Superintendent Shipley, of Baltimore, has reported that the county bridge near Parkton is unsafe, and recommends that the masonry be rebuilt and an iron superstructure be placed upon it. This would cost about \$1,000.

Baltimore & Cumberland.—Engineers J. Onderdonk, Latrobe Weston, Skipwith Lee and P. M. Ritchie are making another survey for the railroad. The new route follows the north bank of the Chesapeake & Ohio Canal from Orleans, Md., to Hancock, Md., and for the remainder of the route to Hagerstown, Md., follows the survey made some months ago. The engineers are now working eastward from Dam No. 6.

Batavia & Northern.—This company was incorporated in Albany this week, to construct a railroad 18 miles long, to be operated by steam or electricity, between Albion, Orleans County, and Batavia, in Genesee County. The capital is \$352,000, and the Directors are George A. Wingate, Jacob Cole, and William H. Hazzard, of Brooklyn; Robert Avery and James H. Cox, of New York City; Ernest Wende, of Buffalo; Oren C. Steele and David D. Lent, of Batavia, and Dwight S. Beckwith of Albion. The principal office of the company will be in Brooklyn.

Blaine & Eastern.—It is reported that Contractor M. J. Henry, of Seattle, Wash., who is now in the East, has about completed arrangements with Eastern capitalists for the sale of bonds for the new road. The road is to be about 25 miles long from Nooksack City, Wash., to New Westminster, B. C. Some work was done on the line by Mr. Henry early in the summer.

Central New York & Western.—The project of extending this road from Angelica, its present terminus, over the roadbed of the old Alleghany Central to Olean, N. Y., is again revived. Recently Vice-President Frank S. Smith, General Superintendent M. S. Blair and other officers were at Olean discussing the project. It is announced that the proposed extension will be made along the roadbed of the Alleghany Central, narrow gauge, which the company now owns, if the desired local aid is promised.

Chickasaw & Choctaw National.—Preliminary surveys are being made for this new road through the Indian Territory, starting from Denison, Tex. The company has

purchased the right and charter of the old Denison & Northern railway survey. It will probably be extended to Gainesville before many months. Colonel Childs, of Kansas City, is Superintendent and General Manager and O. H. Brown, Superintendent of Construction.

Clearfield, Conemaugh & Western.—President S. J. M. McCarrell announces that the Directors will meet at Harrisburg, Pa., shortly and let a contract for building that portion of the line extending from Porter's and a connection with the Beech Creek in Clearfield County to Irvona, Pa., 32 miles, much of which is along Clearfield Creek. At Irvona a 900-ft. trestle will likely be constructed over the Pennsylvania & North Western. A New York firm will probably get the work. The engineers will now proceed with the final location of the road from Irvona to Johnstown, a distance of about 45 miles. This will be the more difficult portion of the line to construct. A tunnel of about 800 ft. may be bored through the ridge dividing the Muddy Run and Black Lick Creek. Samuel Brugger, of Flemington, Pa., is Chief Engineer.

Corsicana & Southeastern.—An injunction has been served on President Cokendall and Contractor R. H. Downey, restraining them from further construction of the road across land about a mile southeast of Corsicana, Tex. Condemnation proceedings will have to be brought before the road can continue grading towards Corsicana.

Delaware & Hudson.—The Ausable branch in northern New York from near Plattsburgh, N. Y., has been completed as far as Ausable Forks village and trains will now run regularly to the Ausable station. The company is to extend this branch from Ausable village south to the Rogers' pulp mill.

Dry Fork.—This company now has 35 miles of railroad in operation, beginning at a junction with the West Virginia Central & Pittsburgh, at Hendricks, and ending at Wharton, W. Va. The road has been built by Robert F. Whitmer, of the Whitmer Lumber Co., of Pennsylvania, and Martin Lane, of the Condon-Lane Boom & Lumber Co., of Maryland and West Virginia. The Chief Engineer is John W. Moore, and the entire work of locating and building was done under his supervision. Ralph Bretz, nephew of Hon. C. L. Bretz, General Manager of the West Virginia Central & Pittsburgh, has been appointed General Manager. The present southern terminus is at Wharton, Randolph County, but the road is to be extended to the Chesapeake & Ohio, thus giving a direct connection between the West Virginia Central & Pittsburgh by a short route. The average grade on the completed portion is 35 ft. to the mile. It follows the Dry Fork of Cheat River for 32 miles to the confluence of Gandy and Dry Forks, where it enters the Gandy Fork Valley. The surveys are made for continuing the line 15 miles further to the Allegheny divide, into Highland County, Va., and only a few miles from the Chesapeake & Ohio Railroad. The road is essentially for timber and coal traffic, as it passes through an unsettled country and is dependent for its development upon the enterprises brought by the railroad. The Condon-Lane Boom & Lumber Co. has put in a saw mill at Wharton and two other mills are being built in that vicinity. The owners of the road own nearly 100,000 acres of coal and timber along the line. Two mixed trains were put on the road last month, making round trips daily over the entire line.

Elkton, Masses & Middleton.—The construction beyond Elkton, Md., was to begin this week. The road is to extend from a point on the Philadelphia, Wilmington & Baltimore Railroad, south of the Elkton Station, southerly through Chesapeake City and St. Augustine to Middleton, Del., where it will connect with the Delaware Division of the same company. The work is in charge of Engineer Pritchard, and the roadbed is now ready for the rails to the Elkton River. The right of way between Elkton and Chesapeake City has been secured.

El Paso & Northern.—The El Paso City Council has granted a terminal franchise to J. L. Bell, trustee, for a railroad to be built from El Paso to the White Oak coal country in New Mexico, 160 miles.

Grand Trunk.—The company has decided to make a connection of about 10 miles between Brantford and Copetown, Ont., east of Hamilton. The distance has been surveyed with the intention of pushing the construction at once.

Gulf, Beaumont & Kansas City.—The 20-mile extension of the road north of Buna, Tex., will be completed by the first of the year. Fifteen miles of grading has been finished and tracklaying will commence upon the arrival of the rails, which were shipped from New York. The new town of Kirby will be the present terminus of the line.

Gulf & Interstate.—Grading on the road on Bolivar Peninsula, north of Galveston, has been completed from Bolivar Point to the junction south of Sour Lake, where connection with the branch to Beaumont is to be made. This is about 20 miles from that town. So far about 50 miles of the line in Texas has been graded. Mr. D. J. Mackey, who went to London for the purpose of negotiating a sale of the bonds, has reached New York on his return and is expected at Galveston shortly.

Hamilton, Ont.—A new steel bridge will be built here over the Burlington Canal by the Dominion Government. Mr. Coste, Chief Engineer of the Public Works Department has nearly completed the plans, and tenders for the work will be called for at an early date in order that the bridge can be built in time for next year's traffic.

Hinton & New River.—At an election, held in Summers County, W. Va., on Wednesday last, it was voted to issue \$30,000 worth of bonds, in aid of this project. This line is to be built from the Chesapeake & Ohio, in Summers County, to a connection with the Norfolk & Western, to develop coal and timber property. The company has secured nearly all the right of way. Actual construction is to begin as soon as the bonds can be realized upon, and the contracts let.

Iowa Central.—Surveyors are reported to be engaged locating an extension of the railroad beyond Story City, westward through the coal fields of Boone County, recently opened up, and which are at present without railroad connections. This extension will cross the Des Moines River at Frazer and extend northwesterly as far as Sibley, in Osceola County. The road is now under the management of L. M. Martin.

Kansas, Oklahoma & Southern.—The local Directors of the company at Guthrie, Oklahoma, announce that they have been advised by President Martin, that he has affected the sale of a portion of the bonds of the company and preliminary arrangements for beginning work on the road will be begun at an early date. The proposed line will start at Coffeyville, Kan., and extend southwest through Oklahoma Territory, to Vernon, Tex.

Millersburg, Ashland & Greenwich.—This is the title of a railroad previously referred to as being built by Hugh M. Camp to Jeromeville in Ohio. The road starts at a point west of Shreve and goes through clay fields

owned by Mr. Camp, to Jeromeville. The construction work is in charge of William Weaver, of Shreve, O.

New Roads.—Colonel Cooper, founder of the town of Seward, ten miles south of Guthrie, Oklahoma, has organized a company to build a short line from that town southeast to the coal fields in the Indian Territory in the direction of Purcell, I. T.

Northern Pacific.—The branch to Lewiston, Idaho, is again being taken up. It was built to Juliette, Idaho, before the Receivers were appointed. Within a few weeks a party of the officers, including Receiver H. C. Payne; J. W. Kendrick, General Manager; E. H. McHenry, Chief Engineer; ex-Senator John C. Spooner, of Wisconsin; Attorneys James McNaught, W. N. Cromwell, and Traffic Manager Hannaford went over the extension, which is a part of the Spokane & Palouse road. One of the officers is quoted as saying that it is now the intention to extend the line to Lewiston at the earliest practicable date, as soon as the permission of the court can be secured.

Ottawa, Arnprior & Parry Sound.—Messrs. Poulin and Fitzpatrick, of Parry Sound, Ont., have been awarded the contract for constructing eight miles of the extension west of Long Lake, Ont. The road is now completed to Long Lake, 147 miles west of Ottawa. The road is an extension of the Canada Atlantic. It is now completed from Ottawa to Long Lake, a distance of 144 miles, and the surveying to Parry Sound is nearly finished. Over 2,000 men, who have been employed on the work this summer have been discharged. In the spring work will again be started and pushed right forward to the terminus of the road at Parry Sound.

Parkersburg, W. Va.—A foot bridge, about 500 ft. in length is to be built across the Little Kanawha River from the foot of Sixth street in this city, to the South side. It has not yet been decided what style of structure to build nor whether accommodations will be provided for vehicle traffic. Among those interested are William Kirk, J. H. Fischer, J. W. Davis, William Bentley, John Dickel and J. H. Howard, all of Parkersburg, W. Va.

Pemiscot.—The early completion of the Pemiscot Railroad, from Kennett, Dunklin County, to Caruthersville, Pemiscot County, in southeastern Missouri, a distance of 24 miles, is now assured and trains will be running regularly by January. The grading was commenced in August and is now practically completed. The track laying has started at Kennett, the western terminus, and is progressing at the rate of a mile a day. This road is being built by Hon. Louis Houck, of Cape Girardeau, and his associates, who have already built several railroads in southeast Missouri, including the St. Louis, Cape Girardeau & Fort Smith road and the St. Louis, Kennett & Southern. The Pemiscot Railroad opens up the last county in the southeast of the State that was without railroad connection.

Philadelphia & Pittsburg.—The location of the line from Mehafeey, Pa., to McGee's Mills has been determined. The engineers are now working down the west side of the Allegheny River in the vicinity of Hannarville. Engineers have been working on two routes for this line since last spring between Mehafeey and Pittsburg. The route on which the engineers are now working starts at Mehafeey, near the headwaters of the west branch of the Susquehanna River, and follows that stream into Indiana County. Crossing the divide from Glen Campbell to Rochester Mills at the headquarters of the Sinnemahoning, it follows the course of that stream to the Allegheny River, which is crossed by a bridge above the grade of the Allegheny Valley road. From Mahoning the route follows the Allegheny River on the opposite side from the Allegheny Valley, crossing the West Penn at Allegheny Junction, above Freeport, and paralleling that road down to the vicinity of Ross Grove, where it again crosses the river. A terminal road was chartered some time ago to carry the new line back of Pittsburg and around to Glenwood where it will cross the Monongahela to a connection with the Pittsburg, McKeesport & Youghiogheny, or Pittsburgh & Lake Erie system.

Point Pleasant, W. Va.—The County Commissioners of Mason County, W. Va., with headquarters at Point Pleasant, have asked for bids for erecting a steel bridge over Big Sixteen Mill Creek. The bridge is to consist of two spans, one 60 ft., and one of 30 ft., with 12 ft. road ways and sidewalks. The bridge is to be supported on steel trestles, resting on masonry above high water. Charles Zuspiner is President of the Board of Commissioners.

Richmond, Petersburg & Carolina.—The negotiations for the sale of this road, which the city of Petersburg, Va., has been carrying on for some months, with W. G. Dacey and others of New York City, seem to have fallen through. This road is chartered to run from Richmond, Va., to Ridgeway, N. C., on the Seaboard & Roanoke road. Its entire stock and franchise is owned by the city of Petersburg. No rails have been laid upon the road. The company owns about \$20,000 worth of property in Petersburg, and the piers for a bridge have been built in Roanoke River in North Carolina. A small portion of work has been done just out of Petersburg for a mile or two. About 20 miles of the road has been graded, and made ready for track-laying, running from the Roanoke River north in the direction of Petersburg. No work is being done on the road at present.

Rio Grande Northern.—G. L. Marshall, Chief Engineer, says that contracts have been signed and that the construction of this road will begin next month. This road is to be 26 miles long, extending from the Southern Pacific at Chispa, near El Paso, in the eastern part of the county, to the San Carlos coalfields, on the Rio Grande River. The road will be completed during the winter and will be operated under contract by the Southern Pacific.

San Pete Valley.—An extension of this road to mines near Morrison, Utah, has just been completed, and now President Bruback has engineers surveying in Salt Creek Canyon, above Nephi, the former terminus. The old line from Moroni has been entirely changed so that a lighter grade can be secured for the standard gaging of the road, which is now about 50 miles long, south of Salt Lake City.

Texarkana & Fort Smith.—The work of track-laying on the railroad has been resumed north of Wilton, Ark., the present terminus, and rails are now laid to a point near the town of Winthrop, Ark., and will reach Little River in less than 20 days. Contracts have been let for the construction of the bridge at Morris Ferry, and the road to Fort Smith, Ark., is apparently to be pushed to completion.

Ulster & Delaware.—At the annual meeting this week a committee to report a plan for the extension of the road from Rondout to Kingston Point, N. Y., was appointed. This will give the railroad direct connection

with the Albany Day Line steamers, which now land at Rhinecliff, on the opposite or eastern side of the river, and if the extension is built, the steamers will land at Kingston instead of Rhinecliff.

Unadilla Valley.—This railroad was completed to Sweet's Station, N. Y., from Leonardsville, last week, and freight and passenger trains are now running to that point. Rails are nearly laid to South Edmeston, and trains will soon be run to that place. This is within a few miles of New Berlin, the southern terminus, a station on the New York, Ontario & Western, near Utica.

Valdosta Southern.—A mortgage deed has been filed in the Superior Court at Madison, Fla., to secure an issue of \$120,000 first mortgage bonds on the railroad, the Citizens' Bank being trustee. This road is now under construction, and will extend from Valdosta, Ga., to Madison, Fla., a distance of about 30 miles, traversing a rich timber and turpentine section in Southern Georgia. About eight miles of the line from Valdosta south has already been built, and this portion of the line is now in operation.

Wichita Falls.—Work on the construction of this branch road in Texas will be commenced, it is thought, during December. The road will extend from Wichita Falls to Henrietta, and will be operated by the Missouri, Kansas & Texas.

Winthrop & Rocky Comfort.—This company filed articles of incorporation with the Secretary of State at Little Rock, last week. The capital stock is placed at \$150,000. The incorporators and directors are W. A. Williams, Fred B. Hubbell, W. C. Merritt, Texarkana, Ark.; Jack T. Nolthenius, Kansas City, Mo.; N. A. George, Rocky Comfort, Ark. This company proposes to construct a line from a point near Winthrop Station on the line of the Texarkana & Fort Smith Railroad in Little River County, southwest to a point near the boundary line between the Indian Territory and Arkansas, and west to Rocky Comfort, 15 miles.

Woodbury & Hardwick.—A charter has been granted for this railroad in Vermont. The incorporators propose to form a company, with \$50,000 capital, to build a railroad connecting a number of valuable granite quarries between these two towns. The road will be $\frac{4}{5}$ miles long.

York & Southern.—President W. F. Walworth states that a number of important improvements are contemplated to be carried out early next season. The most important of these is the standard gaging of the railroad from York, Pa., to the connection of the Baltimore & Lehigh at Delta, Md. These two roads were formerly operated as one line and probably they will again be consolidated in the course of time. The Pennsylvania portion is 35 miles long and if it is made standard gage it will force the Baltimore & Lehigh Road also to change its road to Baltimore to standard gage. In addition to the change of gage, President Walworth states that the long proposed extension from York to Chickies, Pa., on the Susquehanna River, will be undertaken. This will give a new connection with the Philadelphia & Reading and is intended to bring to the road a large coal traffic. President Walworth and President J. W. Brown of the Baltimore & Lehigh have had several conferences lately with a view to establishing an agreement relating to through traffic from New York to Baltimore over the two roads.

GENERAL RAILROAD NEWS.

Atlantic & Pacific.—The Reorganization Committee of the four per cent. guaranteed trust bonds, representing the associated committees in Amsterdam, Holland, Frankfurt-on-Main, and New York, announces that it now controls \$11,000,000 of the bonds and that further deposits will be received up to Dec. 5. Bonds deposited after that date will be subject to a penalty of \$10 per bond.

Atchison, Topeka & Santa Fe.—The report of Mr. Robert Moore, Consulting Engineer of St. Louis, on the physical condition of the lines of the Atchison, Topeka & Santa Fe, Atlantic & Pacific, St. Louis & San Francisco and Colorado Midland, was received in New York by the joint reorganization committee of the Atchison on Tuesday of this week. No part of the report will be published until late in the week. It is understood that Mr. Moore finds that the equipment, roadbed and bridges on the main line and the branches are in good condition. The report takes up about 50 type-written pages and makes an exhaustive discussion of the whole question of the physical condition of the Atchison.

Carolina, Cumberland Gap & Chicago.—In the United States Circuit Court at Charleston, S. C., Judge Simonton has granted an order, on motion of counsel for the Farmers' Loan & Trust Co., of New York, appointing Wilbur T. Herbert Receiver of the railroad company. The trust company, as trustee, represents the holders of \$600,000 of first mortgage bonds upon which there has been default in the payment of interest.

Cedar Falls & Minnesota.—Messrs. Louis Fitzgerald, Simon Borg and Charles Wehrhane announce that acting as a committee to the seven per cent. bondholders of the railroad, they have received from the Illinois Central Railroad Co. a proposition for the settlement of the litigation between the two companies, which has lasted for many years. The Illinois Central will purchase from the bondholders such of the seven per cent. bonds with coupons due Jan. 1, 1898, and after, as may be tendered, by Jan. 1, 1895, paying therefor \$1.125 for each \$1,000 bond, and \$560 for each \$500 bond, in scrip convertible by April, 1895 into the four per cent. bonds of the Illinois Central. The Illinois Central bonds will be a part of a series to be presently issued to the amount of \$3,550,000, secured by a first mortgage to be made by the Dubuque & Sioux City Railroad Co. It is further stipulated by the Illinois Central that not less than \$1,200,000 of the seven per cent. Cedar Falls & Minnesota bonds shall be tendered under this proposed settlement by Jan. 1, 1895, or the agreement to exchange shall not become operative.

Charlotte, Columbia & Augusta.—One of the features of the Richmond Terminal reorganization plan was that this company's first mortgage seven per cent. bonds, maturing next January, were to be continued at a lower rate. This was done at five per cent. by an arrangement with the Maryland Trust Co., and it results in a saving of \$40,000 a year to the Southern Railway Co. The Maryland Trust Co. now offers to holders of the bonds the right to continue them at five per cent. upon payment of 2½ per cent., and the privilege to do so will expire on Dec. 20.

Chicago & Southeastern (Ind.).—Prosecuting Attorney F. A. Hosmer has filed papers in the State Circuit Court at Brazil, Ind., asking that a receiver be appointed for this railroad, formerly the Midland Railroad. Over 200 judgments are held against the company for labor performed, that are over two years old.

Chicago, Burlington & Quincy.—The statement of the earnings and expenses of the road for October, shows a decrease of earnings in every department save that of mail and of "miscellaneous" traffic. The total decrease for the month was \$227,118. The earnings on mail and miscellaneous traffic increased \$8,371. Freight earnings decreased \$203,056. Passenger earnings decreased \$564,861. The following figures show the earnings and expenses for the month of October:

	1894.	1893.	Dec.
Gross earnings.....	\$3,084,199	\$3,843,746	\$759,547
Operating expenses.....	1,519,710	2,029,258	509,548
Net earnings.....	1,564,489	1,814,488	249,999
Fixed charges.....	800,000	822,880	22,880
Surplus.....	764,489	991,608	227,119

The gross earnings from Jan. 1 until Oct. 31 decreased \$5,900,795; operating expenses decreased \$4,921,005; net earnings decreased \$979,790; fixed charges decreased \$228,888; and the surplus decreased \$750,982. Freight earnings for the ten months decreased \$3,226,559 and passenger earnings decreased \$2,699,964.

Cleveland, Canton & Southern.—The Knickerbocker Trust Co., acting for the fourth mortgage bondholders has begun foreclosure proceedings in the United States Circuit Court at Cleveland, O. The bonds of this issue to the amount of \$66,000 are now outstanding. The Trust Company asks that the petition of the first mortgage bondholders for foreclosure be not allowed, and claims that it would involve the road and the various issues of bonds in endless litigation.

Messrs. Morgan Rotch and George P. Messervy, acting as a committee for the Cleveland & Canton trust and improvements bonds, are also opposed to the attempt at foreclosure under the first mortgage bonds. The interest on the first mortgage bonds, due last July, has not been paid, and if default is made on January 1 the first mortgage bondholders will have the right to begin foreclosures, and have announced their intention to do so. Messrs. Rotch and Messervy point out that the bonds represented by them are mislabeled; that they are neither equipment, trust, nor improvement bonds, but are a second mortgage upon the main line of the former Cleveland & Canton Railroad, the main line of the present company. They expect to perfect some plan to pay the interest on the first mortgage bonds, due in January, to prevent the institution of foreclosure under those bonds.

Delaware River & Lancaster.—Train service has been again discontinued on this unfortunate railroad. The road was only put in operation in September last between St. Peter's and Wilson, Pa. It had then been closed for many months but was leased by J. L. Butman and has since been operated by him as General Manager. The road was built a couple of years ago between Phoenixville and St. Peter's, Pa., about 12 miles. It was operated for a time by the Philadelphia & Reading and more recently by the Wilmington & Northern.

Des Moines, Northern & Western.—The foreclosure sale of this railroad at Des Moines, Ia., has been postponed until Dec. 10. The foreclosure is under a decree made by Judge Woolson of the United States Circuit Court at Des Moines in the suit of the Metropolitan Trust Co., of New York. The outstanding bonded indebtedness of the road is \$2,770,000. The default of interest on these bonds is \$77,380. The plan for reorganization of the road after the foreclosure sale, provides for the reduction of the interest on these bonds from six per cent. to four per cent.

Dominion Atlantic.—This company has given notice that application will be made at the approaching session of the Dominion Parliament for a charter with power to purchase the Windsor & Annapolis Railroad in Nova Scotia. The company is now operating that road, W. R. Campbell being General Manager.

Georgia, Carolina & Northern.—This road, which extends across the State of South Carolina and through northeastern Georgia, which has been completed only three years, has become one of the most prosperous railroad properties in the South, and, with the exception of the South Carolina & Georgia Railroad, its gross receipts are already greater than those of any other road in South Carolina, having been very nearly \$1,000,000 during the last fiscal year. As regards net income, it is ahead of all other roads in that State, the South Carolina & Georgia included. The road is now doing a very large through business.

Huntingdon & Broad Top Mountain.—President Spencer M. Janney has completed arrangements for the refunding and extension of the bonds that mature next year. The second mortgage seven per cent. bond amounting to \$367,500, due Feb. 1, 1895, are to be extended for 30 years at four per cent., effecting an annual saving in the fixed charges of \$11,025 annually. The consolidated mortgage five per cent. currency bonds, of which there are \$1,497,000 outstanding, will mature April 1, 1895. They will be replaced by a similar amount of five per cent. gold bonds having 30 years to run, and the entire new issue has been purchased by two Philadelphia banking houses. The only other bonds on the railroad are the first mortgage fours, of which there are \$416,000 outstanding, and which do not mature until 1920.

Lake Erie, Alliance & Southern.—This road, in operation from Alliance to Bergholz in southern Ohio, about 40 miles, is to be sold at sheriff's sale at Alliance on Jan. 3 next. The foreclosure is under a mortgage to Henry B. Payne made on Oct. 1, 1880. The road has been operated by E. E. Scranton as Receiver for the last two years but has not earned its operating expenses.

Lake Shore & Michigan Southern.—The report of the company to the New York Railroad Commissioners for the quarter ending Sept. 30 makes the following comparisons:

	1894.	1893.	Inc. or dec.
Gross earnings.....	\$4,892,058	\$6,064,579	D \$1,172,521
Oper. expenses.....	3,172,918	4,301,434	D 1,128,516
Net earnings.....	\$1,719,140	\$1,763,145	D \$44,005
Other income.....	135,101	118,552	I 16,549

	1894.	1893.	Inc. or dec.
Total income.....	\$1,854,241	\$1,881,697	D \$27,456
Fixed charges.....	1,840,301	1,108,052	D 732,249
Surplus.....	\$74,940	\$773,645	D \$69,505

The general balance sheet shows cash on hand \$726,201, and a profit and loss surplus of \$12,117,597.

Little Rock & Memphis.—A decree has been entered in the United States Court at Little Rock, Ark., by Judges Williams and Edgerton in the case of the Central Trust Co., of New York, against the railroad. The mortgage is foreclosed and the property ordered sold. The first default was in March, 1893, and no interest has been paid since that time. The principal is \$3,186,000 with \$79,650 annual interest since March, 1893, amounting altogether to over \$3,500,000. The road is operated by Rudolph Fink as Receiver and General Manager.

Louisville, Evansville & St. Louis.—Judge Allen, of the United States Circuit Court, at Springfield, Ill., has

entered an order in the case of the New York Security & Trust Co., against the railroad company and others, appointing Edward O. Hopkins and James H. Wilson Receivers of the railroad. These Receivers are already in control of the road under a previous appointment.

Macon & Birmingham.—An order to sell this railroad has been signed by Judge Griggs, at Macon, Ga., the sale to take place the second Tuesday in January, 1895. A cash payment of \$75,000 is required of the purchasers on the confirmation of the sale. The Macon Construction Co. controls the road.

New York, Lake Erie & Western.—The following table gives the earnings and expenses of this company, including all leased and operated lines, for the month of October, 1894, compared with the same period of 1893:

	1894.	1893.	Decrease.
Gross earnings.....	\$2,356,217	\$2,722,117	\$365,900
Oper. expenses.....	1,543,512	1,705,431	161,919
Due to leased lines.....	\$812,705	\$1,016,686	\$203,981
Net earnings.....	\$584,056	\$753,966	\$169,910

Pittsburg, Cincinnati, Chicago & St. Louis.—The Directors have decided to issue \$4,811,000 of 4½ per cent. consolidated mortgage bonds to pay for new construction and for retiring the five per cent. sectional bonds; \$3,862,000 of that amount will be used in paying the Pennsylvania Co. for advances. The bonds will not be placed on the market at present.

Seaboard Air Line.—This company is making some important improvements on the North Carolina Division. The rails of the Carolina Central road between Monroe and Hamlet are to be taken up at once and replaced with a heavier section, and the stations are being remodeled. New iron bridges are being built across Lane and Richardson's creeks, and work on the second span of the heavy new seven-span iron bridge across the Pee Dee River in Rockingham County, on the Carolina Central road, was begun last week.

Texas Western.—An order has been issued in the Circuit Court of the United States at Galveston, Tex., for the foreclosure sale of this road on Jan. 1 at Houston, Tex. The main line of the road extends from Houston westerly to the town of Sealy near the Brazos River, a distance of 43 miles. It was paralleled by the Missouri, Kansas & Texas when it built its line into Houston, Tex., and even long before that time the road had been unable to meet its operating expenses.

Washington & Chesapeake Beach.—The action of the Circuit Court of Anne Arundel County in appointing a Receiver for the company on Oct. 27 has been nullified by a decision of Judge Morris, in the United States Circuit Court, at Baltimore. He decided that the State court did not have jurisdiction in the matter, and that the jurisdiction was properly held by the United States Court under the suit brought by Charles Pelham several months ago.

Wilmington, Chadbourn & Conway.—In pursuance of a decree of the Circuit Court of the United States made on Aug. 24, in a suit of the Baltimore Trust & Guarantee Co. against the railroad, its property will be sold at public auction in the city of Wilmington, on Dec. 10. The railroad is now in operation from Conway, in Horry County, South Carolina, to Hub, in Columbus County, North Carolina, 51 miles.

Worcester, Nashua & Rochester.—The company will ask the next Massachusetts Legislature to allow it to fund the floating debt, not exceeding \$200,000. A Boston paper in this connection suggests that it would be pertinent for the Legislature to inquire whether any part of such debt was incurred by payment of dividends in excess of current revenue or in payment of excessive premiums for outstanding bonds. The road is leased to the Boston & Maine.

TRAFFIC.

Traffic Notes.

Traffic Manager Shelby, of the Great Northern Road, is quoted as saying that the agreement between that line, the Oregon Navigation, and the Southern Pacific provide for ticketing passengers from eastern points to San Francisco via Portland. The Great Northern, it is said, will establish a fast steamship service between San Francisco and Portland.

The Chicago & Alton is to put on a new train between St. Louis and Chicago, to be known as the "midnight special." It will leave St. Louis every night at 11.30, reaching Chicago at 9.30 the following morning. The Chicago & Alton train leaving Chicago at 5 p. m., has a through California sleeping car via St. Louis. It will be attached to the Iron Mountain fast mail train, leaving St. Louis at 3 a. m., and run through to Los Angeles.

The Texas Railroad Commissioners have dismissed the application of the City of Galveston for the abrogation of the 6-cent cotton differential. As recently noted in these columns, the railroads of Texas have always charged a higher rate on cotton from the interior to Galveston than from the same point to Houston, and the difference has come to be agreed to as an arbitrary. The arbitrary was formerly 10 cents and then fell to 8 cents; and the State Railroad Commissioners not long ago reduced it to 6 cents. Galveston merchants wanted it abolished altogether and made strenuous arguments before the Commission in favor of its claim.

The Pennsylvania Railroad announces that passengers between New York and Philadelphia may on request have their baggage specially marked so as to be first unloaded from the car at destination, and, at New York, carried on the first ferry-boat, thus making it possible for the passenger to claim the baggage immediately on arrival. The baggage man will attach a special check marked with the word "coupé."

The Chicago, Milwaukee & St. Paul has still further largely decreased its operating expenses by the cutting off of several subordinate heads of departments.

The Railroad Commissioners of Missouri have held a hearing at which a reduction in grain rates was considered. Representatives of the principal roads were present. Reports state that probably no immediate action will be taken.

The Denver Chamber of Commerce is taking active steps to establish a freight bureau. The organization which recently went to pieces was participated in by other cities. Under the new plan it is proposed that Denver act for itself alone.

A Philadelphia firm has ordered 5,500 bales of cotton from Galveston to be brought on a barge which will be towed by a steamship which will itself carry 2,000 bales. Until recently, the insurance companies have refused to take risks on barges for ocean trips.

The Trades League of Philadelphia has had printed several thousand placards which it will send to hotels and public places in the West, setting forth that a stop-over can be obtained from the conductor on each ticket

purchased from points west of Pittsburgh to the East, permitting the holder to stop off 10 days in Philadelphia.

The freight rate war at New Orleans, which has been in progress for several weeks, and was carried on by means of rebates which took the shape of allowances for cartage, has been ended. It is said that the practice of the New Orleans & North Eastern and the Mobile & Ohio, whose stations are unfavorably located and who began the contest by paying cartage, has been agreed to by the other roads.

The following shows the receipts of flour and grain at Buffalo to Dec. 1 in the years named (last three figures omitted):

	Flour.	All Grain.	Flour and Grain.
	bbls.	bu.	bu.
1894.....	10,370	95,185	147,038
1893.....	9,852	132,629	181,890
1892.....	9,268	127,619	171,643
1891.....	7,080	122,254	155,887
1890.....	6,711	84,421	116,253
1889.....	5,050	88,017	112,607

Judge Sage, in the United States Circuit Court at Cincinnati, Dec. 1, refused to grant a temporary injunction restraining the Cincinnati, New Orleans & Texas Pacific from discriminating against Cincinnati shippers. The action was brought by the Inter-State Commerce Commission at the request of the Cincinnati and Chicago freight bureaus, which alleged that higher rates were charged from those cities than from Eastern cities. Judge Sage held that a temporary injunction would be ordering an execution before the case was heard, that the Commission was administrative and not judicial, that it was not necessary to file a transcript of testimony taken by the Commission, though such testimony may be used as evidence, and that an injunction would work injury to the defendants. Final hearing is set for Jan. 14.

Chicago Traffic Matters.

CHICAGO, Dec. 5, 1894.

Eastbound rail shipments last week fell off materially, principally in grain, indicating that the grain shippers are attempting to force the roads to break their agreement for the maintenance of grain rates by holding off shipments or sending everything in sight by lake. Lake shipments largely increased and rates stiffened to 2½ cents a bushel on grain to Buffalo and will probably reach 3 cents this week. The unexpected demand for bottoms led several boats to take cargoes for the East and go into winter quarters there instead of remaining at this port as was intended. Westbound freights are not holding up at all well, while west of here the grangers are not getting anything near their usual amount of tonnage at this season of the year and the officials are all correspondingly blue.

The new division-of-tonnage arrangement of the Southwestern roads is not proving much more successful than its predecessors, owing to a failure of the lines "over" to comply with the orders for diversion to the lines "short." The lines ordered to divert claim as usual that they cannot get enough freight to make the diversions. Apparently there is little hope for any equitable division of the traffic until the pooling amendment goes through Congress.

The trans-continental passenger representatives are still in session considering various plans for the formation of a new association. The matter is now in the hands of a special committee, which is endeavoring to formulate some scheme which will secure the assent of all the Northwestern lines, including the Great Northern and Canadian Pacific. The lines are again met with the old question of rates to north Pacific Coast points and the demand of the Canadian Pacific for a differential. The Atchison will never agree to allow the Northern lines advantages which it cannot secure for its own route. Consequently the key to the whole situation is apparently in the hands of the Southern Pacific, which can dictate to the Northern lines the terms on which they can enter San Francisco. The only progress thus far made by the committee is a report recommending a division of the entire territory into five groups in charge of committees, to be known as the Pacific Coast Committee, in charge of territory west of Ogden and El Paso; the Central Committee, in charge of territory east of Ogden and El Paso and including the Missouri River; the Southern Committee, with headquarters at St. Louis; the Northern Committee, with headquarters at St. Paul, and the Eastern Committee, with headquarters at Chicago; the last three to divide between them all territory east of the Missouri River.

The Western Passenger Association has again formally disbanded. The chairman and secretaries are to be kept at work clearing up and looking after the rate sheets and the immigrant clearing house agreement, with the expectation that the machinery of this association will be made available for the new trans-continental association if an agreement is reached.

Notwithstanding the protests of the packing house shippers, the Western lines put into effect on Dec. 1 the advanced rates on their commodities and now the shippers threaten to smash all the agreements to smithereens by consigning all their export shipments via Galveston and New Orleans.

The Southwestern lines have agreed to suspend hostilities and restore all passenger rates to tariff, on Dec. 12, pending the termination of efforts to form a new association.

The shipments of eastbound freight, not including live stock, from Chicago, by all the lines for the week ending Dec. 1, amounted to 34,182 tons, against 47,856 tons during the preceding week, an increase of 13,674 tons, and against 45,452 tons for the corresponding week last year. The proportions as carried by each road were:

ROADS.	WEEK TO DEC. 1.		WEEK TO NOV. 25.	
	Tons.	p. c.	Tons.	p. c.
Michigan Central.....	2,321	6.9	2,807	5.9
Wabash.....	2,508	7.3	3,766	7.9
Lake Shore & Mich. South..	4,239	12.4	4,935	10.3
Pitts., Ft. Wayne & Chicago.	4,890	14.3	6,196	13.0
Pitts., Cin., Chi. & St. Louis	5,793	16.8	7,606	15.9
Baltimore & Ohio.....	2,645	7.7	3,369	7.0
Chicago & Grand Trunk....	3,562	10.5	5,009	10.4
New York, Chic. & St. Louis	3,671	10.7	7,036	14.7
Chicago & Erie.....	3,407	10.0	5,782	12.2
C., C. C. & St. Louis.....	1,146	3.4	1,323	2.7
Totals.....	34,182	100.0	47,856	100.0

Of the above shipments 1,598 tons were flour, 7,711 tons grain and mill stuff, 8,989 tons cured meats, 7,350 tons dressed beef, 1,033 tons butter, 1,801 tons hides, and 4,060 tons lumber. The three Vanderbilt lines carried 30.0 per cent, the two Pennsylvania lines 31.1 per cent. Lake lines carried 61,590 tons against 47,856 tons last week.